JAWA
MOTORCYCLE

JAWA

250 cc. MODEL 353/04

SPECIFICATION AND OPERATOR'S MANUAL

WITH SPECIAL REFERENCE TO
SERVICING
AND
ROUTINE MAINTENANCE

MANUFACTURERS: IDEAL JAWA (INDIA) PRIVATE LTD.
Industrial Estate, Mysore 2, South India.

1965 Edition

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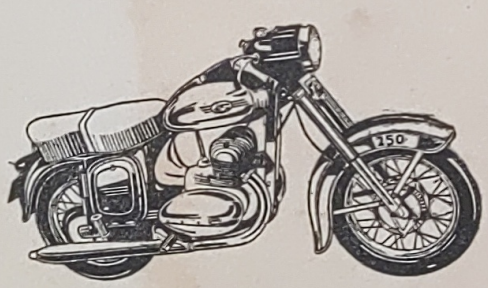

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The experts, designers and craftsmen of our motor-cycle works have prepared for you this model of the most up-to-date design. First class workmanship guarantees agreeable riding and control of the motor-cycle under any circumstances. It is hoped that this new model will meet all your requirements.

This manual will help you to get acquainted with your machine, its parts and their operation. It will advise you as to its maintenance and how to rectify any minor defects.

We wish you thousands of pleasant and joyful miles with your new IDEAL JAWA.

LIST OF ILLUSTRATIONS

1. JAWA 250 c. c. — model 353/04
2. Engine 250 c. c. — sectional view
3. Plan of the Motorcycle
4. Induction silencer—sectional view
5. Electric wiring diagram
6. Stop switch
7. Oil filling and inspection hole
8. Fuel tap positions
9. Butterfly air valve
10. Lubrication chart — L. H. side
11. Lubrication chart — R. H. side
12. Draining the gearbox oil
13. Removing the chain connecting link
14. Adjusting the brake
15. Rim and tyre — sectional view — fitting the tyre cover
16. Correct tyre fitting
17. Adjusting the chain
18. Chaincase lid
19. Clutch operation diagram
20. Adjusting the clutch
21. Carburetter, flange type
22. Removing the fuse
23. Exhaust silencer — sectional view
24. Removing the front wheel
25. Taking out the rear wheel spindle
26. Dismantling the chaincase
27. Rear wheel brake drum — exploded view
28. Front wheel — sectional view
29. Rear wheel — sectional view
30. Disconnecting the exhaust pipes
31. Removing the cylinder head
32. Removing the cylinder barrel
33. Fitting the piston rings
34. Front fork — sectional view
35. Lubricating the steering head bearing balls
36. Lubricating the steering head bearing balls
37. Adjusting the twist grip
38. Removing the dual seat
39. Disconnecting the rear suspension damper top bracket
40. Pivoted rear fork bushing — sectional view
41. Removing the battery
42 Two-stroke engine operation diagram

INDEX

I SPECIFICATION AND OPERATOR'S MANUAL

	page
1. Technical data	7
2. Description of motorcycle	10
3. Electrical equipment description	13
4. Running a new motorcycle	18
5. Servicing instructions	20
6. What should be avoided	23

II MAINTENANCE

1. Cleaning the motorcycle	24
2. Lubricating the motorcycle	25
3. Adjusting the brakes	30
4. Tyres	30
5. Adjusting the chain	31
6. Adjusting the clutch	34
7. Carburetter	35
8. Electrical equipment maintenance	38
9. Decarbonisation	41

III DISMANTLING AND ASSEMBLING WITHOUT THE AID OF SPECIAL TOOLS

1. Removing the front wheel	43
2. Removing the rear wheel	44
3. Removing the chaincase and the chain	45
4. Removing the rear chainwheel	45
5. Replacing the wheel ball bearings	45
6. Removing the cylinder head and barrel	49
7. Replacing the piston rings	50
8. Removing the carburetter	50
9. Dismantling the clutch	51
10. Dismantling the headlamp	51
11. Dismantling the steering head and fork legs	53
12. Handlebars — twist grip	55
13. Removing the dual seat	55
14. Removing the fuel tank	55
15. Removing the cowls	55
16. Dismantling the rear suspension	56
17. Privoted Fork	57
18. Removing the battery	58
19. Dismantling the switch box	58
20. Removing the engine from frame	59
21. Removing the R.H. and L.H. engine covers	59

IV DEFECTS, CAUSES AND REMEDIES 60

Two-stroke engine operation 63

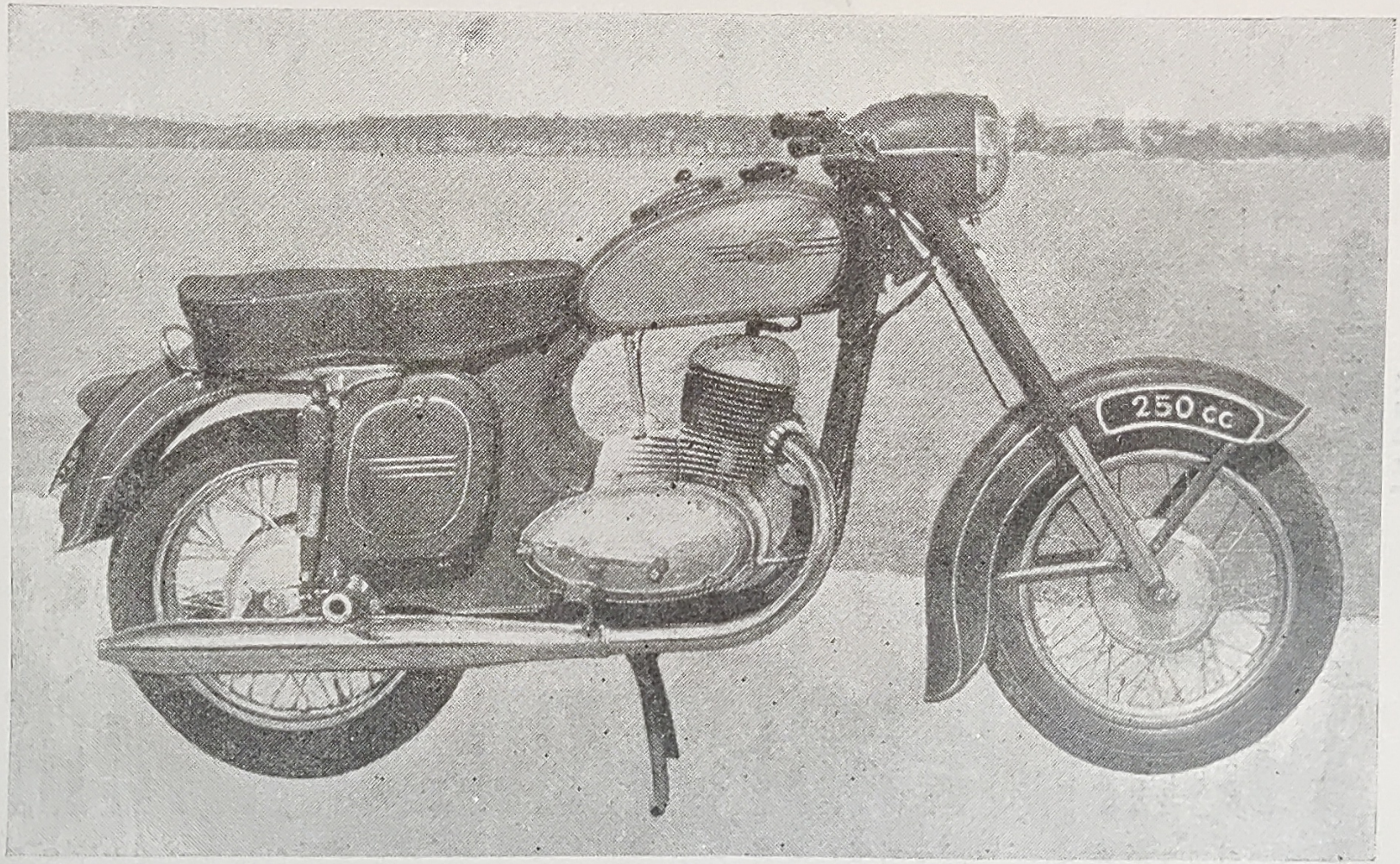


Fig. 1 JAWA — 250 c. c. — Model 353/04

I. SPECIFICATION AND OPERATOR'S MANUAL

1. TECHNICAL DATA

250 c. c.
Model 353/04

Engine	Two-stroke, air-cooled
Number of cylinders	One
Bore	65 mm
Stroke	75 mm
Cylinder capacity	248.5 c. c.
Compression ratio	7.2 to 1
Engine output	12 BHP
Fuel consumption at steady 60 km. p. h.	3 litres/100 km.
(37 m. p. h.)	(93 m. p. gallon)
Fuel tank capacity	13.05 litres (2.9 gall.)
Maximum speed	105 km. p. h. (65 m. p. h.)
Maximum climbing ability (fully laden)	45%
Dimensions of motorcycle — length	1980 mm
— height	1025 mm
— width	670 mm
Weight of motorcycle — dry	129 kg (284 lbs)
— inc. fuel	139 kg (306 lbs)
Carrying capacity (payload)	160 kg (353 lbs)
Front wheel spindle maximum load	85 kg (187 lbs)
Rear wheel spindle maximum load	214 kg (471 lbs)
Primary drive by 3/8 x 3/8 in. chain	60 links
Final drive by 1/2 × 5/16 in. chain	120 links
Primary and final drive ratios:	
Primary	45/22 T
Final	46/19 T
Bottom gear	19/12 × 24/12
Second gear	19/12 × 19/17
Third gear	19/12 × 16/20
Top gear	1/1 direct
Overall gear ratios:	
Bottom gear	15.675 to 1
Second gear	8.761 to 1
Third gear	6.268 to 1
Top gear	4.951 to 1
Overall kickstarter ratio	3.41 to 1
Speedometer drive ratio	5/11 T
Internal expanding brakes	dia 165/35 mm
Braking distances from 40 km. p. h.	
(25 m. p. h.) front wheel brake	30.8 m. (101.05 ft.)
rear wheel brake	30.8 m. (101.05 ft.)
both brakes applied	12.5 m. (41.01 ft.)
Front fork maximum stroke	130 mm (51/3 in.)
Pivoted rear fork maximum stroke	100 mm (3 15/16 in.)
Carburetter	2926 SBD
Wheels — size of rims	1.85 B × 16 in.
size of front tyres	3.00 or 3.25 × 16 in
size of rear tyres	3.25 × 16 in.

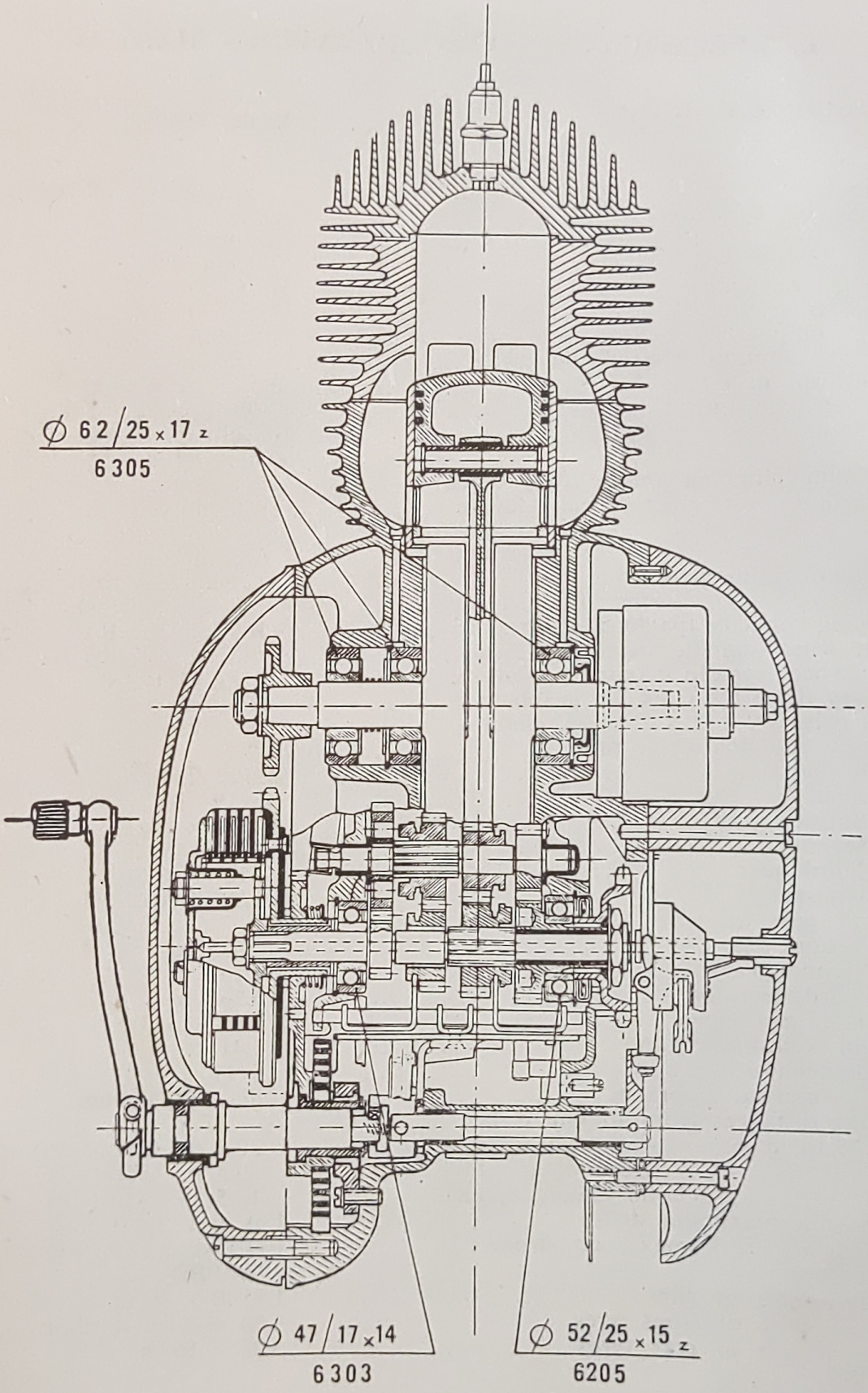


Fig. 2. Engine 250 c. c. — sectional view

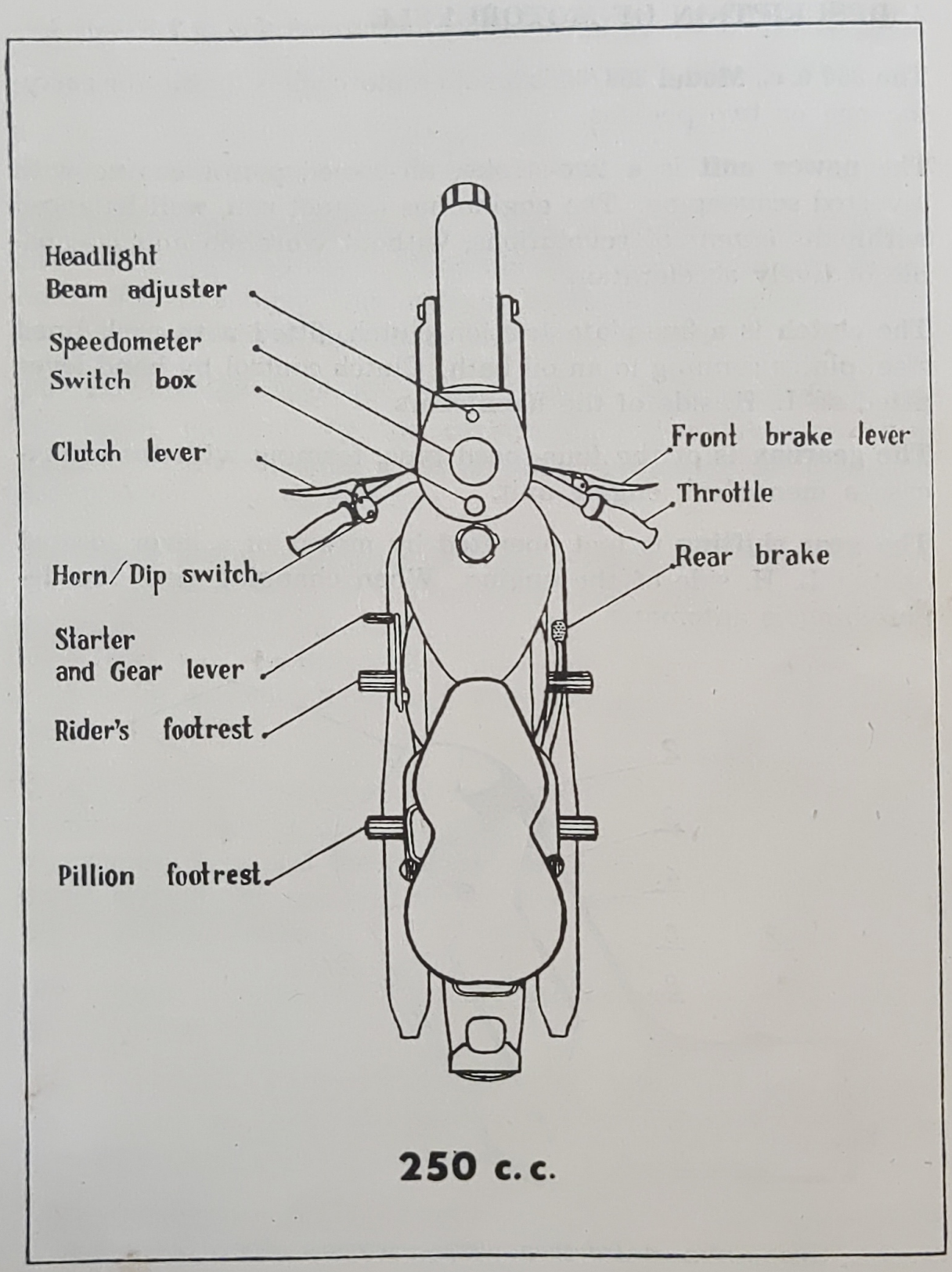


Fig. 3. Plan of the Motorcycle

2. DESCRIPTION OF MOTORCYCLE

The 250 c. c., Model 353/04 is a solo motorcycle suitable for carrying one or two persons.

The power unit is a two-stroke, air-cooled petrol engine with inverted scavenging. The engine has a quiet run, well balanced within its extent of revolutions, without vibration and is capable of lively acceleration.

The clutch is a five-plate friction clutch, fitted with cork lined steel plates running in an oil bath. Clutch control by hand lever fitted on L. H. side of the handlebars.

The gearbox is of the four-speed type, forming with the crankcase a monoblock engine unit.

The gear shifting is foot operated by means of a lever located on the L. H. side of the engine. When changing gear the declutching is automatic.

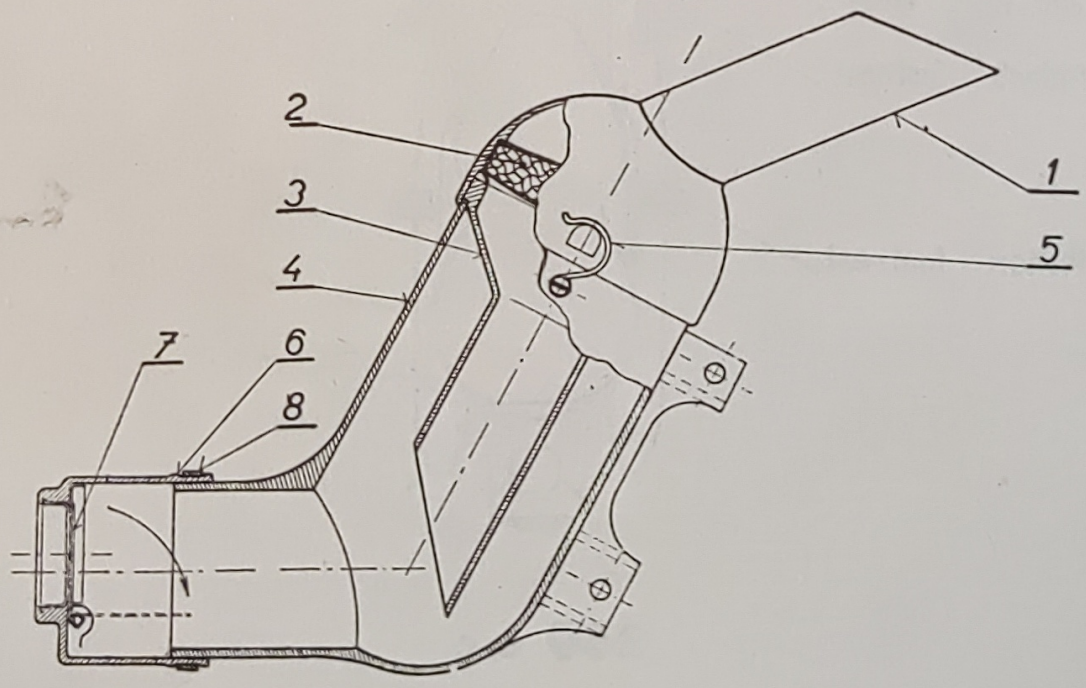


Fig. 4. Induction silencer—sectional view

1. *Induction silencer cover*
2. *Air cleaner*
3. *Insert*
4. *Silencer body*
5. *Clamp*
6. *Rubber sleeve*
7. *Butterfly air-valve*
8. *Fastening strap*

The starting of the engine is foot operated by means of the same lever as gear shifting and is effected by depressing the shaft and rotating the lever into the starting vertical position. As soon as the engine starts running the lever returns automatically into the horizontal position.

The power transmission is by means of chains. The primary chain is enclosed by the L. H. crankcase cover and runs in an oil bath. The final drive (secondary) chain is fully enclosed; this arrangement makes the chain last much longer.

The carburetter—2926 for model 353/04—is concealed in the crankcase, enclosed by the carburetter cover. An induction silencer with air cleaner accessible after removing the dual seat is attached to the carburetter.

The spoke wheels are easily detachable—both the front and rear wheel spindles being of the push-out type. The construction of the front and rear wheel is similar. The rear wheel is connected with the rear chainwheel by means of a splined driver. The number of spokes is 36 in each wheel, spoke dia. 3.5 mm. thread M 4.

The brakes are of full width hub and very efficient. The front brake is controlled by hand lever, fitted on right hand side of the handle bars and the rear by foot lever located on the right hand side of the engine. Brakes are easily adjustable without the aid of any tools.

The frame is built up of square section welded tubes with a pivoted rear fork.

The fuel tank is a sheet steel pressing. It is fitted with a filler cap dia 60 mm (2.36 in.), and a fuel tap with filter. It has an emergency fuel reserve of approx. 1 litre ($1\frac{3}{4}$ pts.)

The dual seat with foam-rubber padding is very comfortable. Together with the rear suspension it offers a superior ride to both driver and the passenger. The dual seat is detachable and covers an auxiliary box for tyre inflator and spare parts.

The footrests are of the sports type and adjustable.

The handlebars of 22 mm (55/64 in.) outer diameter have a width of 670 mm (263/8 in.). They are of one piece, the clutch and front break cables being adjustable by means of grub screws at the handlebar levers.

The front suspension consists of a telescopic fork with hydraulic dampers. It is of the straight slider type with two cylindrical coil springs. The suspension elements are protected by steel cover tubes. In the top portion of the front fork stanchion tubes air valves are fitted through which compressed air escapes at the down-stroke of the suspension.

The rear suspension operates on a circular path. The pivoted rear fork is sprung by two cylindrical coil springs and fitted with hydraulic dampers. The suspension dampers are protected by chromium plated steel covers.

The motorcycle could be locked by means of an ordinary padlock. A bracket has been located for this in the L. H. side of the steering head, and the motorcycle could be locked after completely turning the handle bars to the right.

List of Tools :—

Tyre lever with hook Spanner	
Tyre lever	
Double Ended Spanner	22/19
Double Ended Spanner	17/14
Double Ended Spanner	13/12
Double Ended Spanner	10/9
Double Ended Spanner	7/6
Combined Spanner	32/22
Tube Spanner	10mm
Tube Spanner	14mm
Tube Spanner	17mm
Tommy Rod	
Screw Driver	1
Tool Kit Bag	

3. DESCRIPTION OF ELECTRICAL EQUIPMENT

Ignition and lights are effected by an A. C. Magdynamo. **The magdynamo** is a small alternator in which rotor (permanent magnet) while rotating in fixed coils of the stator induces the current required for the ignition of the mixture as well as for the lights and the charging of the battery. The three circuit system is arranged so that the ignition and the headlamp main beam are supplied direct from the magneto alternator, whereas the battery serves exclusively as an auxiliary source for the parking light, the tail lamp, stop light, horn and also to facilitate easy starting.

The magneto stator is secured by two M6 bolts and clamps to the crankcase. The entire housing can be rotated through 36 degrees for ignition advance setting. The contact breaker complete is fitted on the stator. Its position on the stator is located by the manufacturers by means of an Oscillograph to ensure most suitable tension for ignition and lighting, and this position should never be altered under any circumstances.

The terminal base fitted on to the stator has the following terminal numbers :—

Number 11 Voltage supply for Ignition
„ 20 Voltage supply for battery charging
„ 55 Voltage supply for Head Light

The rotor is fitted on to the Crank Shaft and held by a bolt together with the cam controlling the contact breakers.

The battery—14 AH, 6V—with lead plates and electrolyte (diluted sulphuric acid) is located in the L. H. side box and connected to the frame with its positive (plus) pole. **A 15 Amp. fuse** is fitted in a case next to the battery.

A Rectifire (which converts the A. C. magneto current to D. C. for the charging of the battery) is located on the battery box and is accessible after the dual seat has been removed. It does not require any maintenance and any manipulation whatsoever with it should be avoided.

The switch box is built into the headlamp and distributes the magneto and battery current to the accessories.

The terminal plate (at the bottom) of the switch box has the following terminal numbers :

Number 11 for ignition—connected to terminal No. 11 of magdynamo base plate.

„ 15 For ignition connected to terminal No. 15 of H. T. Ignition coil.

„ 21 For battery charging connected to terminal No. 21 of the rectifier.

„ 30 Connected to negative terminal of battery.

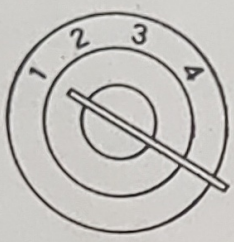
„ 30 Two leads from this terminal (1) to horn and (2) to stop light switch.

„ 55 For Head lights—connected to terminal No. 55 of magdynamo base plate.

„ 56 For Head lights—connected to Dip switch on Handlebars.

„ 58 Two leads from this terminal (1) to parking light and (2) to tail light.

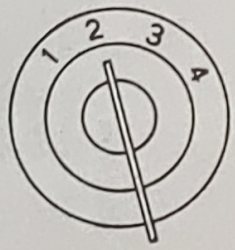
SWITCH KEY POSITIONS



POSITION 1

Engine not running

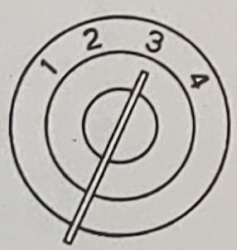
Key removed or partly inserted. All appliances except horn and stop-light are off. Day riding Key fully inserted. Ignition and charging circuits connected.



POSITION 2

Night riding in town. Key fully inserted. Ignition and charging circuits connected, Pilot Light and Tail Lamp on. Battery gets charged at increased revolutions.

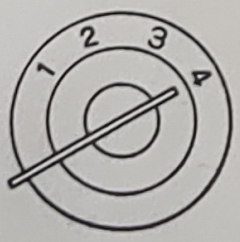
Parking: With the key removed both bulbs remain on, but the other circuits are cut.



POSITION 3

Highway night riding. Key fully inserted, Ignition and charging circuits connected, the pilot light and Tail lamp are on. The Head-Lamp main bulb is supplied with current from magdyno direct. To switch from main beam to dipped beam, use dip-switch on handle bars.

Battery gets charged at increased revolutions.



POSITION 4

Riding on battery. Key fully inserted, Ignition Coil connected with the battery direct, the charging circuit is connected.

This position is to be used for easy starting only.

Battery discharges in this position and hence the key should be switched on Position I after the engine starts.

JAWA 250
WITH MAGNETO ALTERNATOR

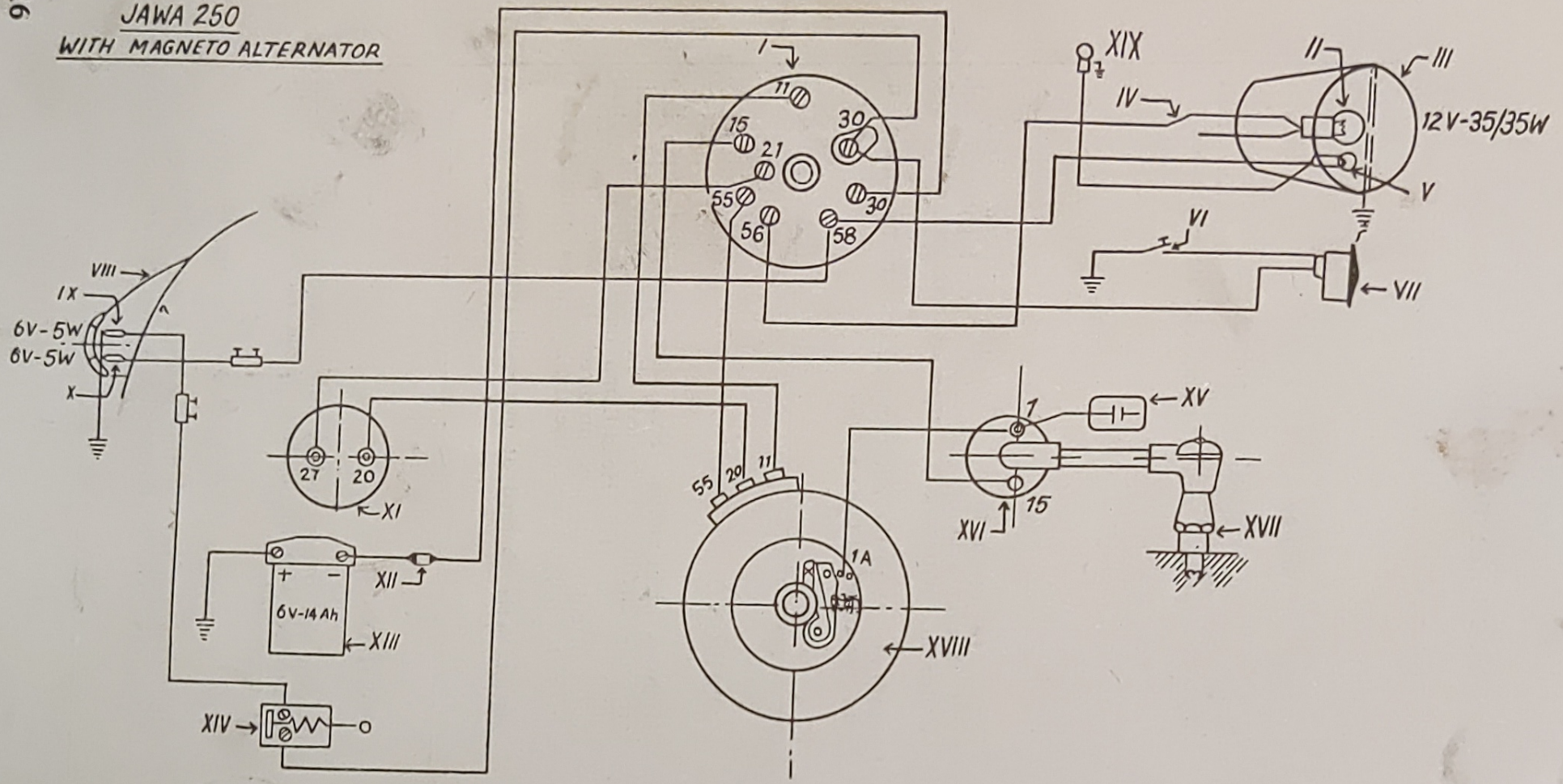


Fig. 5. Electric Wiring Diagram

I Switch Box
II Headlamp Bulb
III Headlamp
IV Dip Switch
V Parking Light Bulb
VI Horn Switch
VII Horn
VIII Tail Lamp
IX Stop Light Bulb
X Tail Light Bulb
XI Rectifier
XII Fuse
XIII Battery
XIV Stop Light Switch
XV Condensor
XVI H. T. Ignition Coil
XVII Spark Plug
XVIII Magneto
XIX Speedometer Bulb

Other Electrical Accessories :

The Head lamp is fitted with a 12V—35/35 W **double filament bulb** with Ba 20d Socket. The pilot bulb 6 V—1.5 W with Ba 9s socket is also fitted in the head lamp.

Tail lamp bulb—6 V 5 W
Stop light bulb—6 V 5 W

The electric Horn 6 V—2 Amps fitted under the head lamp is fed by the battery and is operated by a push button on the dip switch.

The H. T. Ignition coil is fitted to the frame underneath the fuel tank.

The condensor of value—0.27 mF is placed on the frame in the vicinity of the ignition coil. The condensor lead is connected to terminal No. 1 of the ignition coil.

The sparking plug used is either Mico HW 145T1 or KLG F50. The stop light switch is located in the R. H. side tool box.

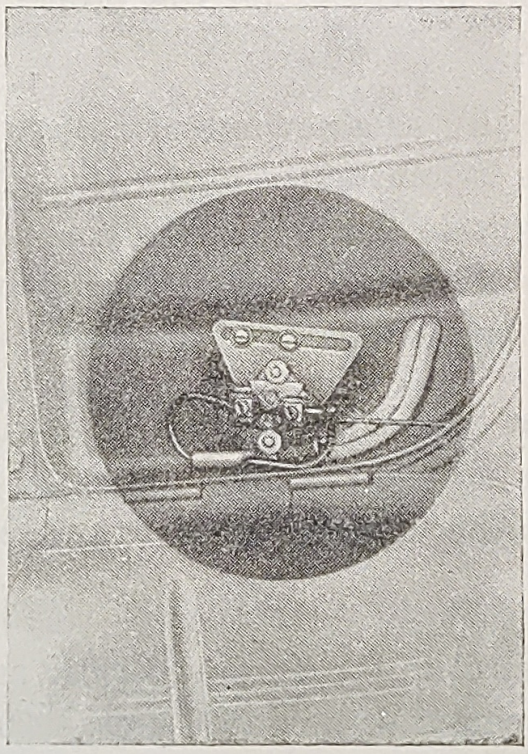


Fig. 6. Stop switch diagram

All connections are of varnish coated automobile leads.

The lead terminals are brass or soldered. The leads from magneto to switch box; dip switch to main bulb; and sparkling

plug leads have 1.5 mm² (0.0023 sq. in) in section, and the remaining leads 1 mm² (0.0015 sq. in.).

4. RUNNING A NEW MOTORCYCLE

When taking over a new machine and before making the first trip the customer is advised to check the equipment of the motorcycle as well as the oil level in the gearbox and in the front suspension dampers. The oil level in the gear box can be checked by the oil level inspection hole closed by the oil level screw M6 x 8. For fillling up with oil see Part II, para 2, "Lubricating the Motorcycle". To check the correct oil level in the hydraulic suspension dampers depress the front and rear of the motorcycle in turn as much as possible, releae quickly and check the recoil for smooth, bounceless movement. Or ride for a short distance on a rough road and check the front and rear suspension respectively for bouncing, knocking, noise and rattle. It should be pointed out that the riding comfort on this type of motorcycle depends above all on the proper operation of the hydraulic dampers.

A new motorcycle just as a new motor car requires careful running if the engine is to attain a long life. Only with such running in it is possible to harmonize the contact faces of all the moving parts smoothly so as to aviod local overheating of the friction faces and possible damage to them.

It is thus clear that the basic condition of good running in is not to use high engine power for a given time, i.e. to keep the speed down according to the table below and to observe the following instructions :

a) Mix oil with petrol in the approved ratio as follows : During the running-in period of first 1500 kms. (900 miles) at a ratio of 1 to 16, i.e. 62 millilitres of oil to one litre of petrol ($\frac{1}{2}$ litre of oil to 8 litres of petrol) and thereafter at a ratio of 1 to 20, i.e. 50 millilitres of oil to one litre of petrol ($\frac{1}{2}$ litre of oil to 10 litres of petrol).

The lowest and highest speeds in the individual gears for motorcycles not run-in (i.e. to the mileage 1500 km. or 900 miles) :

1st gear	... ...	10—18 km. p.h. (6—11m.p.h.)
2nd gear	... ...	18—30 km. p.h. (11—19 m.p.h.)
3rd gear	... ...	25—42 km. p.h. (16—26 m.p.h.)
4th gear	... ...	35—60 km. p.h. (22—37 m.p.h.)

b) Table showing speed to be maintained and carburetter setting with reference to mileage.

Kms. (miles) covered	Tolerated maximum speed	Carburetter setting	
		Needle position	Pilot air screw slackened by
Upto 1500 km. (900 miles)	60 km. p. h. (37 m. p. h.)	4th notch from top.	¼ turn
1500 to 3000 km. (900 to 1850 miles)	75 km. p. h. (47 m. p. h.)	3rd notch from top	½ turn
Over 3000 km. (1850 miles)	not limited.	3rd notch from top	½ turn

Note : During the running-in period, the carburetters are set for a rather rich mixture. It is necessary in the interest of fuel consumption to adjust the needle position and the pilot air screw in the course of running in accordance with the above table.

c) When slowing down to a stop keep the engine at idling speed.

d) Check periodically all screws and nuts for slackness and after covering approx. 200 km. (120 miles) tighten the spoke nipples. We are especially pointing out the necessity to tighten well the engine fixing screws (2 in the front and 2 in the rear—the rear screws are accessible after removing the L. H. side box).

e) Change the oil in the gearbox after the first 500 km. (300 miles). Repeat this operation after 1500 km. (900 miles). See Part II, para 2, "Lubricating the Motorcycle".

f) After the first 1000 km. (600 miles) change damper oil in front fork dampers. See Part II, para 2 "Lubricating the Motorcycle".

5. SERVICE INSTRUCTIONS

A. Before starting

Make sure there is fuel in the fuel tank. Open fuel tank filler cap by turning it anticlockwise. Keep filler cap breathing hole clean. After running in the motorcycle mix oil with fuel at a ratio of 1 to 20 (at a ratio of 1 to 16 during the running in period).

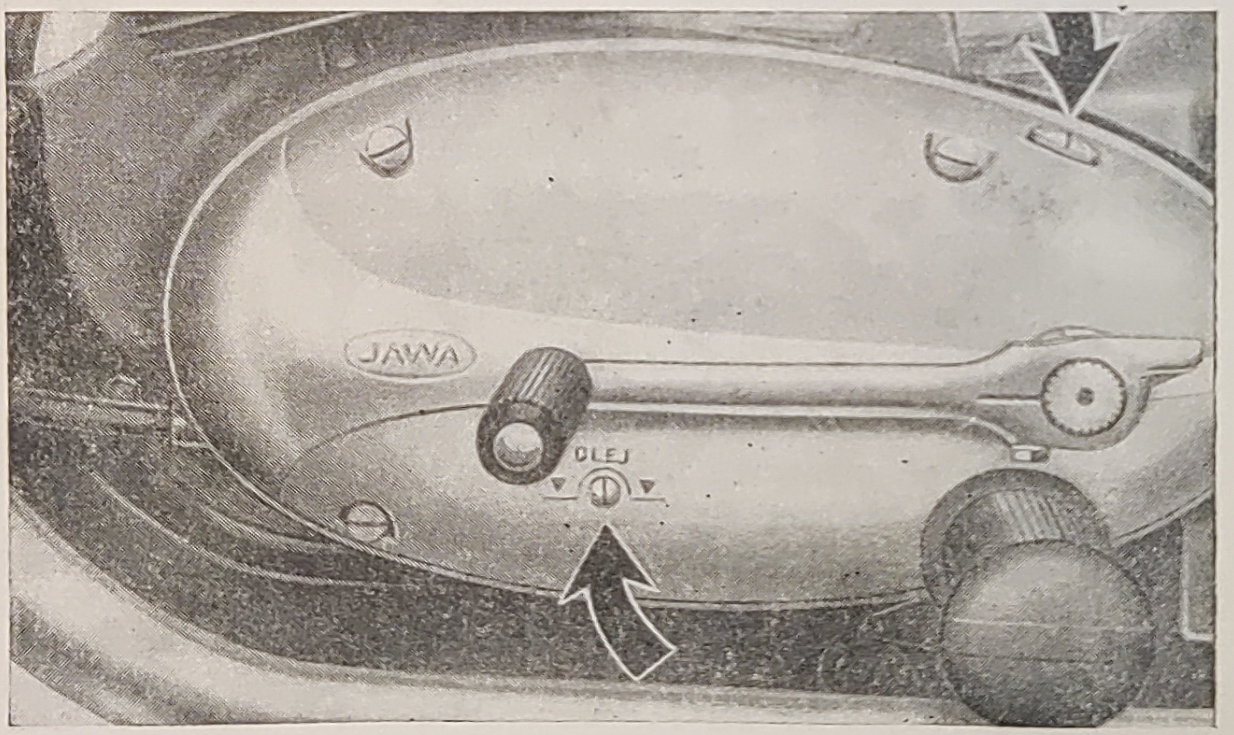


Fig. 7. Oil filling and inspection hole

The fuel tank is fitted with a lever type fuel tap. This fuel tap ensures an emergency fuel supply for about 20 km. (12 miles), depending on the terrain and speed. Should this fuel reserve

be exhausted tilt the machine to the left thus bringing the remaining fuel from the R. H. half of the fuel tank into the L. H. half, i.e. to the fuel tap. This last reserve will do for about 4 km. (2.5 miles).

Check the tyre pressure. The pressure in the front tyre should be 18 lbs. sq. in. (1.25 atm), in the rear tyre 21 lbs. sq. in. (1.5 atm.); when riding with pillion passenger increase to 28 lbs. sq. in. (2 atm.).

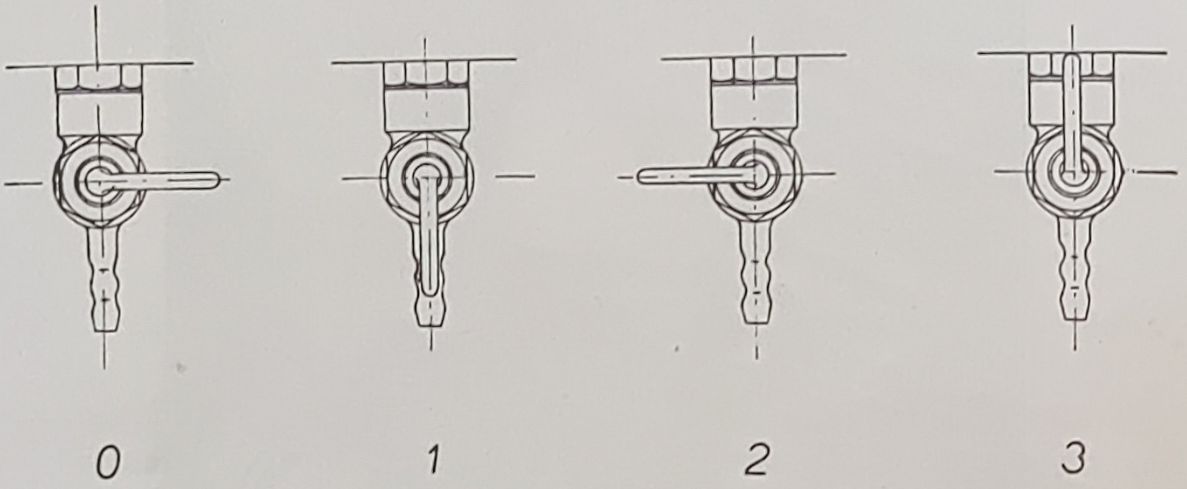


Fig. 8. Fuel tap position

0. fuel shut off
1. fuel main supply open
2. fuel shut off
3. fuel emergency open

B. Starting the Engine

a) Check and see that the gear is in the neutral position (between the bottom and the second gear).

b) Open the fuel tap, close the carburetter air intake by turning the air cleaner strangler and flood the carburetter by pressing down the tickler pin. (Flooding and air intake closing should be carried out only if the engine is cold).

c) Insert ignition key into switch box.

d) With a slight pressure of the foot on the face provided on the gear change lever hub press the lever towards the engine rotating it at the same time into the starting position. Then start the engine by kicking the starter down. As soon as the engine has started the lever returns automatically to its horizontal position. If required the engine can be started with the gear engaged if the clutch lever is depressed.

Note :

If the motorcycle has not been in use for a considerable period the clutch plates may be stuck. It is recommended to test the clutch before starting the engine. Engage the bottom gear, push the motorcycle and declutch two to three times. If the clutch opreation is correct shift to neutral.

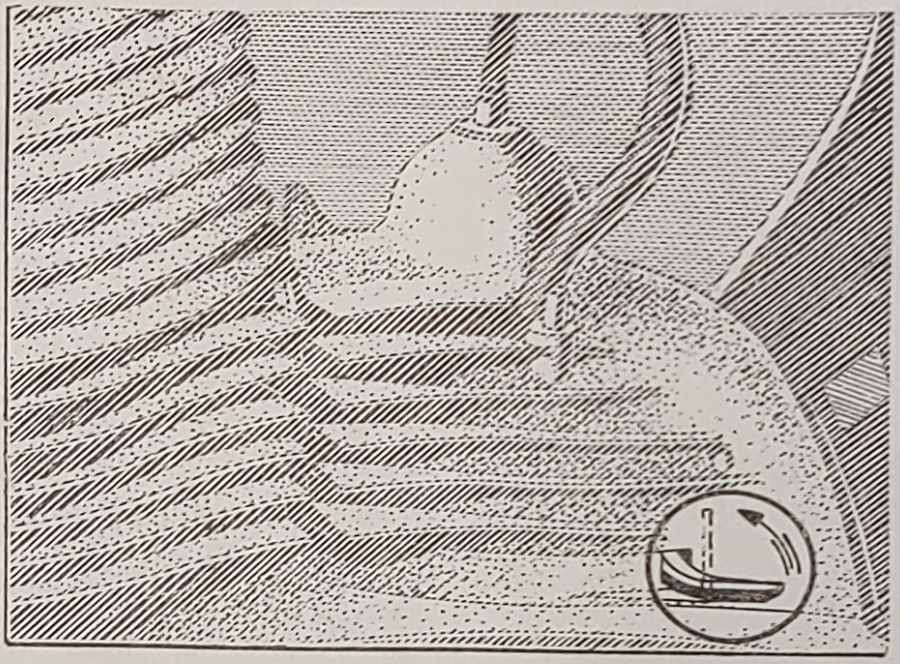


Fig. 9. Butterfly air valve (horizontal position — air open; vertical position — air closed)

C. Riding

a) Depress fully clutch lever with your left hand, shift into bottom gear with your left foot by pushing the foot gear change lever upwards and release the clutch lever slowly while at the same time gradually opening the throttle. Should the clutch cable be broken the motorcycle can be started by slowly releasing the gear lever from the upper position. As soon as a speed of 15 km. (9 miles) is reached close the throttle, push down the gear lever with your foot (engage second gear) and reopen the throttle. Engage the other gears in the same manner. When changing down the gear lever has to be lifted upwards. It is recommended to declutch at the beginning before you get the feel at what speed to change down without declutching.

It is pointed out that between the third and top gear is an unmarked neutral position. Both the neutral positions are engaged by shifting the gear lever half way between the two gears.

The lowest and highest speeds in the individual gears for run-in motorcycles :

1st gear	10—25 km p.h. (6—16 m.p.h.)
2nd gear	20—45 km p.h. (12—28 m.p.h.)
3rd gear	20—65 km p.h. (20—40 m.p.h.)
4th gear	...40 km p.h. upwards (25 m.p.h. onwards)

b) When slowing down to a stop, close the throttle, declutch, put on the brakes and shift the gear lever into the "neutral position" between the bottom and second gear. Only then release the clutch lever. During short stops (on crossroads, etc.) shift the gear lever into bottom gear and keep the clutch lever depressed. When braking, also use the front brake but a little later than the rear brake and only when travelling straight on.

Having finished riding turn off the fuel tap, remove switch key and if required lock the safety lock.

Having finished riding for the day, let the engine run at low revolutions after the fuel has been shut to consume the fuel in the carburetter. The oil in the petrol mixture deposits in the float chamber and might choke the jet.

6. What should be avoided

To let the engine race while it is standnig is harmful as it is not being cooled. Do not keep it declutched for any considerable time as the cork inserts of the clutch plates would be subjected to unnecessary wear. Never help the engine uphill by letting the clutch "slip" but change down in time; do not ride for long with bottom gear engaged.

II. MAINTENANCE

1. CLEANING THE MOTORCYCLE

The simple smooth lines of the motorcycle make it easy to clean. Use plenty of water for washing the machine, preferably with a sponge. Wash with paraffin parts that have been soiled with oil and dust. When washing take care to keep the carburetter, headlamp and brakes clear of water. Wipe dry enamelled and chromium plated parts and polish them with flannel or chamois leather. The enamelled parts can be polished with an enamel polish.

To remove the water from the cylinder cooling fins, start the enigne, the warmth of which will cause the water to evaporate. Note : Petrol, paraffin and oil dissolve rubber (tyres, handlebar grips, footrests). Consequently protect the rubber parts from

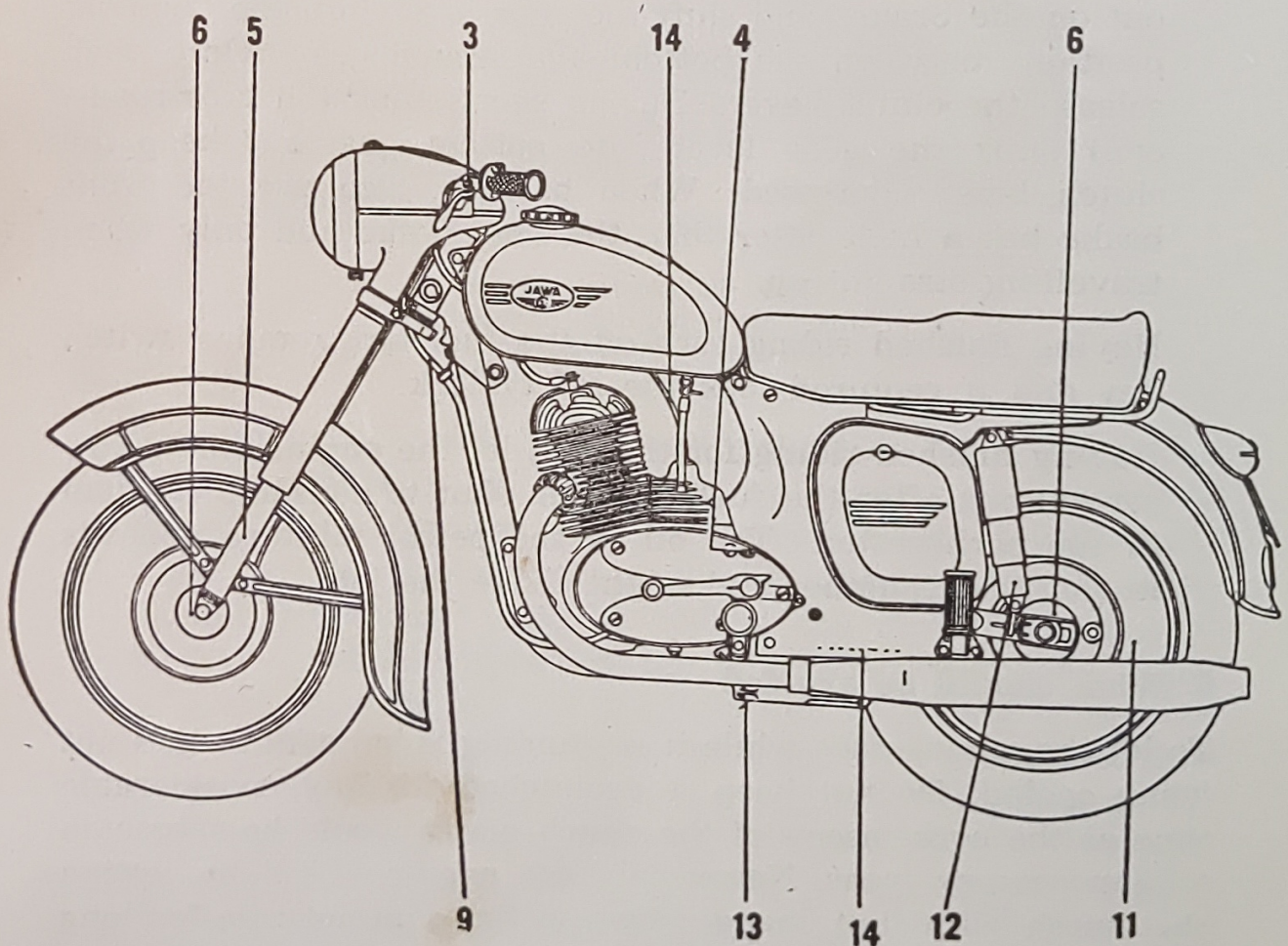


Fig. 10. Lubrication chart — L. H. side

contact with the liquids mentioned. The tail lamp, made of polysterene, has to be particularly protected from contact with the mentioned liquids which have a damaging effect.

2. LUBRICATING THE MOTORCYCLE

The engine is lubricated automatically by adding oil to the fuel at a rate of 1 : 20 (in the ratio of 1 : 16 during running-in period). Refill **the gearbox** oil after every 3,500 km. (2,000 miles). Change the oil preferably after having finished a trip while both the engine and oil are warm. The warm oil will scavenge any accumulated sludge.

The correct oil level in the gearbox is determined by the inspection screw, (fig 7—bottom arrow). Check the oil level from time to time by unscrewing this screw and top up, if necessary.

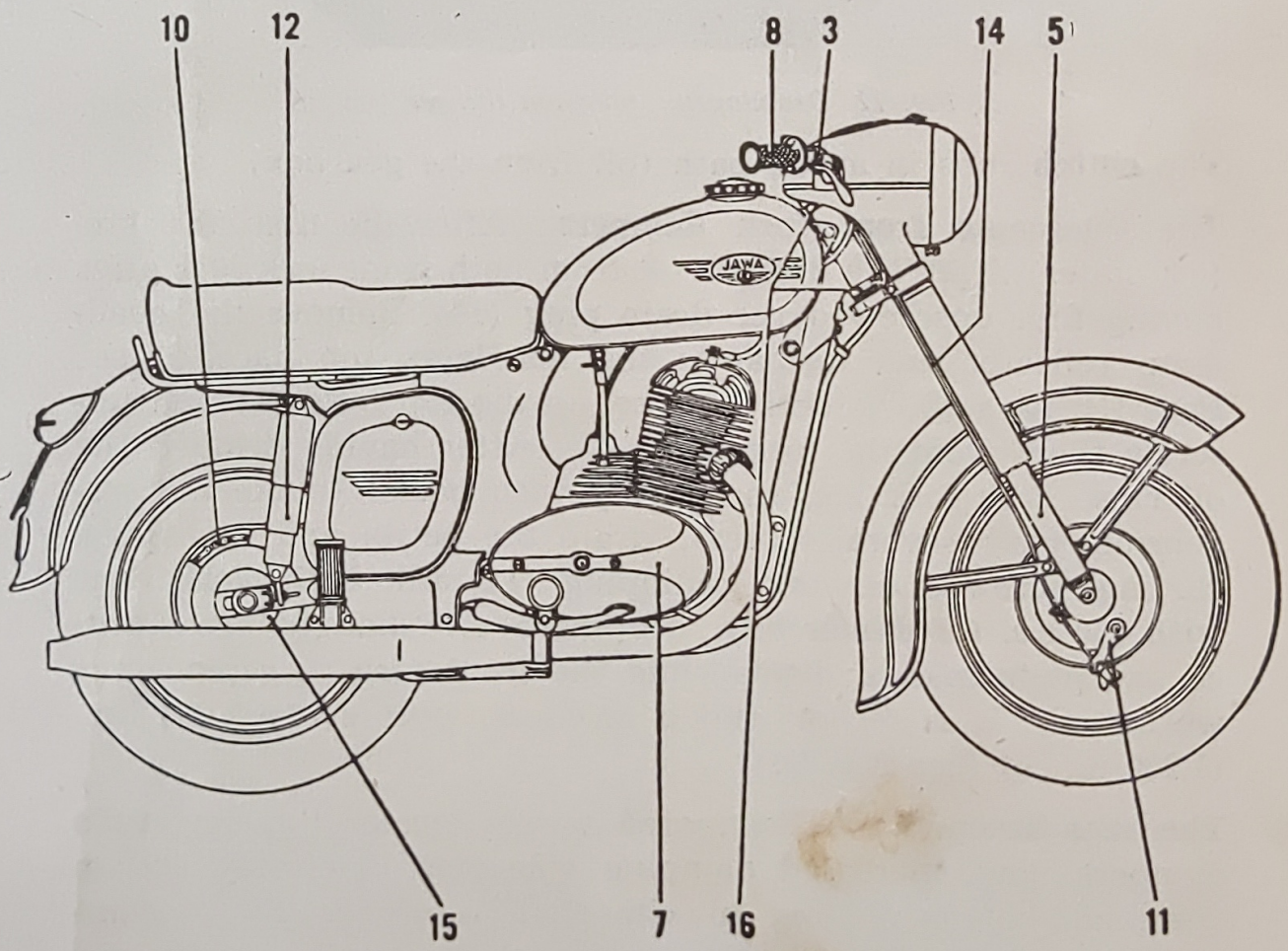


Fig. 11. Lubrication chart — R. H. side

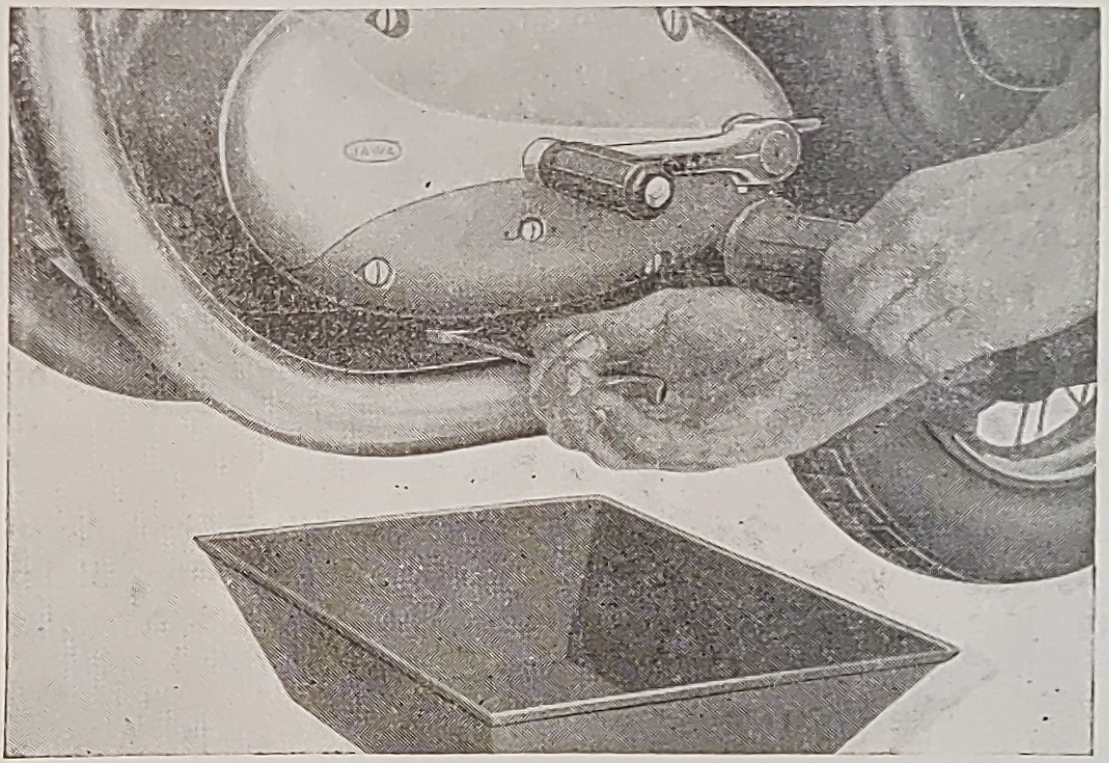


Fig. 12. Draining the oil from the gearbox

The clutch runs in an oil bath (oil from the gearbox).

The telescopic front fork dampers: After the first 1000 km. (600 miles) drain the damper oil from both front fork legs after having first unscrewed the drain plug (14). Remove the headlamp reflector and dismantle the headlamp top nacelle (see Part III, para 10) to obtain access to the top nuts (1) and unscrew them from the fork tubes (3). After having drained the oil rinse both fork legs thoroughly with petrol (make the suspension play several times), drain the petrol and let it dry. Having screwed in the drainplug (14) fill **both fork legs with 150 c.c. (of damer oil).** No more oil changes are needed except in case of dismantling the front fork or replacing a worn seal. It is recommended to check after every 2,000 km. (1,200 miles) (see Fig. 34).

The rear dampers: As compared to the former the new type dampers have increased damping efficiency, and they are so designed that no topping up with oil is required. It is recommended to have any possible repairs, cleaning the interior etc. done in a specialist workshop.

LUBRICATING CHART

Km (Miles) covered	Lubrication point	Point No.	Total	Type of Lubricant
500 (300)	Control lever pins (front brake, clutch)	3	2	Castrol SAE 50 Shell X100 Motor Oil 50 Esso Motor Oil 50
1000 (600)	Gear Box (top-up)	4	1	Castrol SAE 50 Shell X100 Motor oil 50 Esso Motor oil 50
3000 (1900)	Contact breaker arm pin Speedometer drive cable	7 9	1 1	Castrol SAE 50-40 Shell X100 Motor oil 40 Esso Motor oil 50-40
	Contact breaker felt	7	1	Castrolease Heavy (HMP) Shell Retinex A Esso wheel Bearing grease
	Twist Gip	8	1	Castrolease Grease CL Shell Retinex A Esso Multi Purpose Grease H
3500 (2000)	Gear Box (Change)	4	1	Castrol SAE 50 Shell X100 Motor Oil 50 Esso Motor. oil 50
5000 (3000)	Wheel Bearings	6	2	Castrolease Heavy HMP Shell Retinex A Esso Wheel Bearing grease
8000 (5000)	Secondary (Rear) Transmission Chain	10	1	Castrolease Graphited Shell Retinex A Graphited Grease No. 3 Gg
	Break Cams Control Cables	11 14	2	Castrol SAE 50-40 Shell X 100 Motor oil 50-40 Esso motor oil 50-40
	Centre Stand Pin Rear Chain wheel Bearing Steering Head bearing balls	13 15 16	1 1 2	Castrolease Heavy HMP Shell Retinex A Esso wheel Bearing grease
When necessary	Telescopic front fork	5	2	Castrol Shock oil Shell Damper oil Esso Shock absorber oil
	Mixture with petrol Ratio 1:20 (1:16 during running-in period)			Castrol SAE 50-40 Castrol two stroke self mixing SAE 50 Shell X 100 Esso Motor oil 50-40

The pivoted rear fork : The pivoted rear fork pin is automatically lubricated with oil from the gearbox.
Wheels (bearings) have to be lubricated with grease after removing the dust caps. Lubricate the rear chainwheel bearing (see Part III, para 4), having first removed the rear chainwheel.
The primary chain is totally enclosed by the L. H. crankcase cover and runs in an oil bath. It does not require any attention. When badly worn it should be replaced. When replacing the primary chain the clutch should be dismantled. (It is recommended to have this operation done in a repair shop equipped with suitable tools.)

The Secondary chain has to be serviced after every 8,000 km (5,000 miles). Having pulled out the chain wash it in paraffin. Let it dry and place it for about three hours in a slightly warm lubricant. Take out the chain, let the lubricant solidify and after removing the chaincase fit the chain. See Part III, para 3 — Removing the chaincase, Removing the chain and Assembly.

Mag-Dynamo : After 3,000 km. (1,900 miles) remove the R.H. side crankcase cover and with a few drops of oil lubricate the contact breaker arm pin. Care has to be taken to ensure that no oil gets on to the contact breaker points. The felt on the contact breaker base plate has to be soaked with grease.

The control cables (clutch, front and rear brake, throttle) should be lubricated after every 3,000 to 5,000 km (1,900 to 3,000 miles) with a few drops of oil.

The twist grip should be lubricated after every 3,000 km. (2,000 miles) with grease after removing the twist grip from the handlebars. Unscrew the screw holding the plug in the rubber grip and pull off the grip.

The speedometer drive cable should be lubricated with a few drops of oil every 3,000 km. (1,900 miles) after removal of the headlamp rim with reflector from the headlamp (see Part III, para 10) and disconnecting the speedometer.

The steering head bearing balls should be lubricated with grease (see Part III, para 11), at least once every 8000 km (5,000 miles).

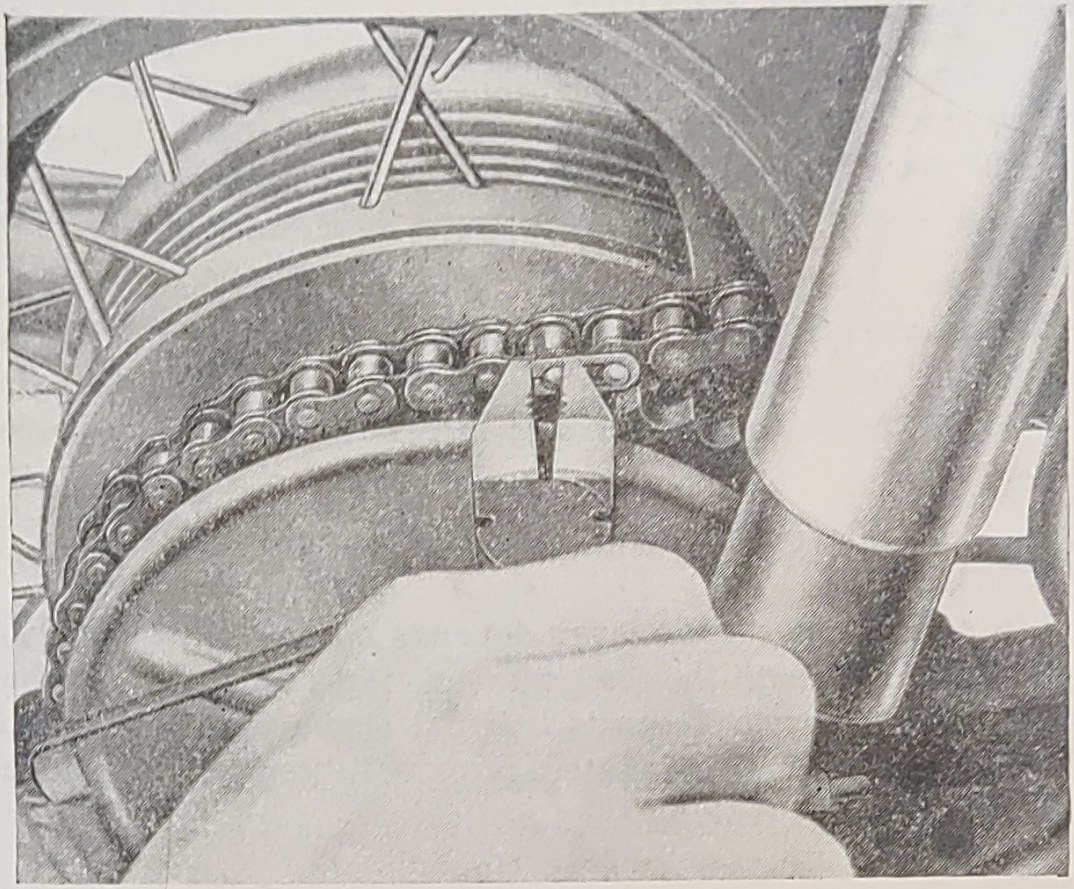


Fig. 13 Removing the chain connecting link

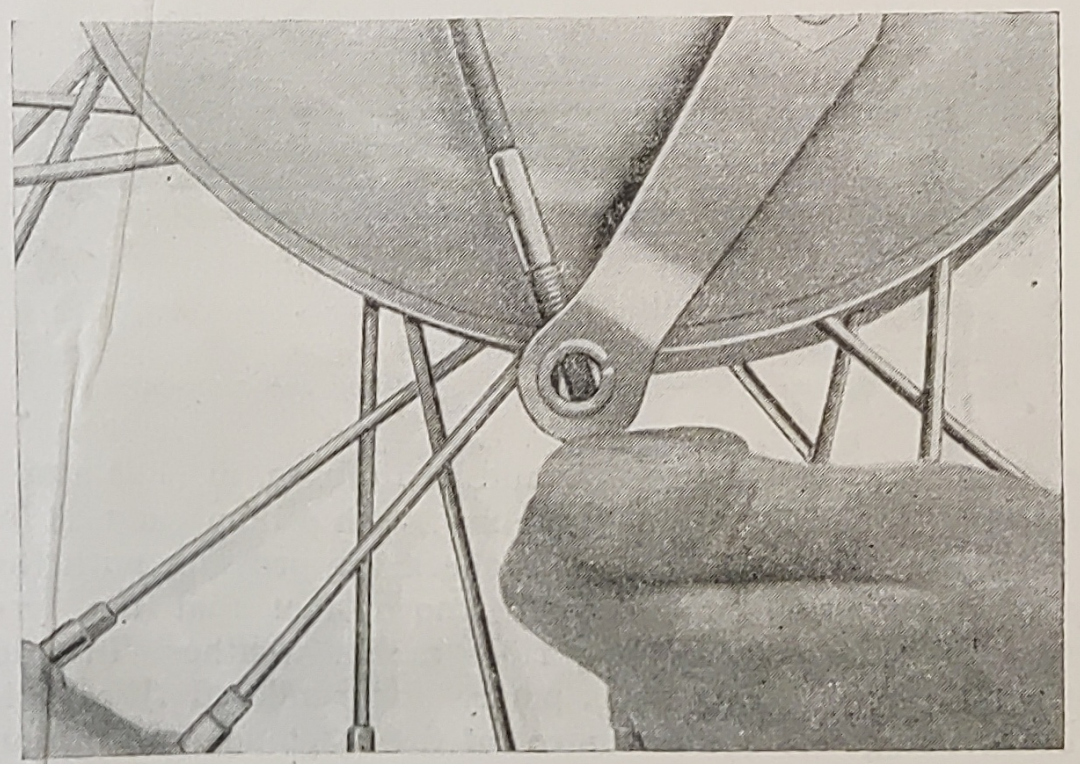


Fig. 14 Adjusting the brake

3. ADJUSTING THE BRAKES

The motorcycle full width hub brakes are well dimensioned and are fully shielded against water penetration which would reduce their efficiency. The brakes require only occasional adjustment when the brake shoe lining is worn (excessive brake lever stroke).

The brakes are adjusted by turning the adjuster nuts. Having adjusted the brakes check the wheels for free rotation. With the rear brake the stop switch has to be adjusted as well — see para 8.

4. TYRES

The life of the outer tyre cover depends on the inner tube air pressure in relation to the load carried. As a rule the tyre has to be inflated so as to keep its original shape even under full load. Running on under-inflated tyres will result in the cover wall cord threads breaking.

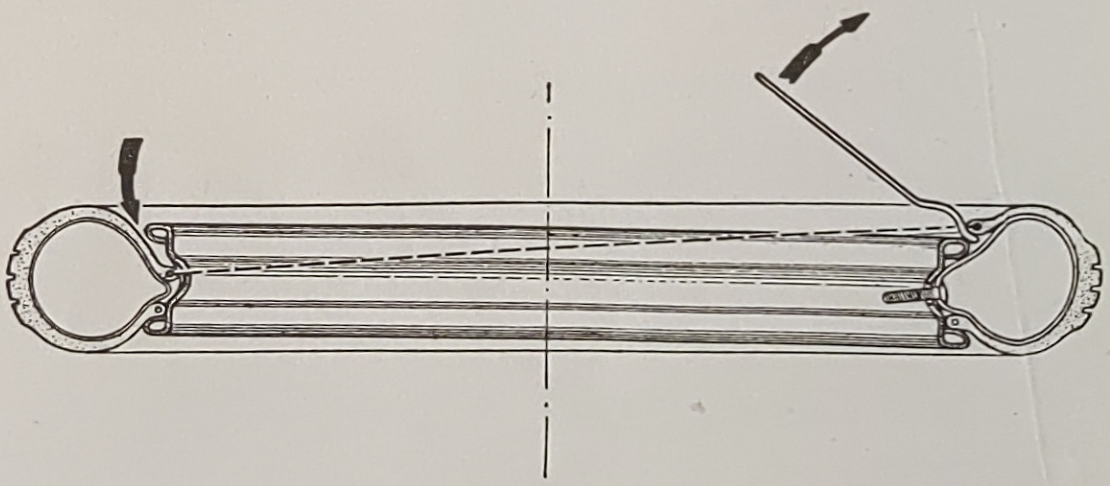


Fig. 15 Rim and tyre — sectional view — fitting the tyre cover

The pressure in the front tyre should be 18 lb. sq. in (1.25 atm.), in the rear tyre 21 lb. sq. in. (1.5 atm.), with pillion rider 28 lb. sq. in. (2 atm.). It is advisable to check the pressure with the tyre pressure gauge. It is a well known fact that the tyre pressure increases during long rides in hot weather. In cold weather, on snow or icy roads partly under-inflated tyres will be of advnatage for better control of the machine. In addition

attention is called to the fact that oil, petrol and strong sunshine are harmful to the tyres. Examine the tyres from time to time and remove any foreign matter, such as sharp gravel, glass etc., struck in the tyre pattern.

Check the tyre valves for leakage by unscrewing the valve cap and moistening the valve. Should any bubbles appear, the valve is leaky. In such case tighten the valve core (the slotted valve cap will serve for the purpose). Should the valve still leak, screw out the valve core and replace it by a new one. It is advisable to keep a couple of valve cores as spares. A punctured tube has to be patched. The tyre cover will have to be removed in the following manner :

Unscrew the valve core and deflate the tube completely. Unscrew the nut securing the valve to the rim. Lay the wheel in a horizontal position and press the tyre edge well into the rim base at a point **diametrally opposed** to the valve. Using the tyre levers slip the cover edge over the rim edge. Take care not to pinch the tube and thus damage it. Having slipped all the cover circumference over the rim edge press the valve completely out of the rim base and remove the tube. Having screwed in the valve core and inflated the tube partially the punctured spot will be best located by plunging tube into water. Mark the punctured spot (e.g. with a copying pencil), dry the tube and repair as follows :

Slightly rub the punctured spot with a piece of sand-paper. Smear the rubbed spot with rubber solution. Allow the solution to dry and only then place the patch after first removing its protective coating. Press the patch well to the tube, especially at its edges. Powder the patch spot with French chalk (talcum powder) to prevent the tube sticking to the inner walls of the cover at the spots where the solution was smeared. Examine the outer cover carefully and remove foreign materials, if any.

Fitting the tyre :

Inflate the tube partially, insert it into the cover, one edge of which has remained in the rim, push the valve through

the rim hole and secure it by its nut (do not tighten). Slip on the cover side over the rim edge **beginning opposite the valve,** hold it in the rim recess and work with tyre lever gradually on both sides towards the valve. Proceed carefully in order not to damage the tube by pinching it between the cover and rim edges.

Tyre patching is an emergency remedy only during a trip when a nail has punctured the tyre. For permanent repairs of tyres and tubes damaged by sharp gravel or glass rely on vulcanisation by a repair shop.

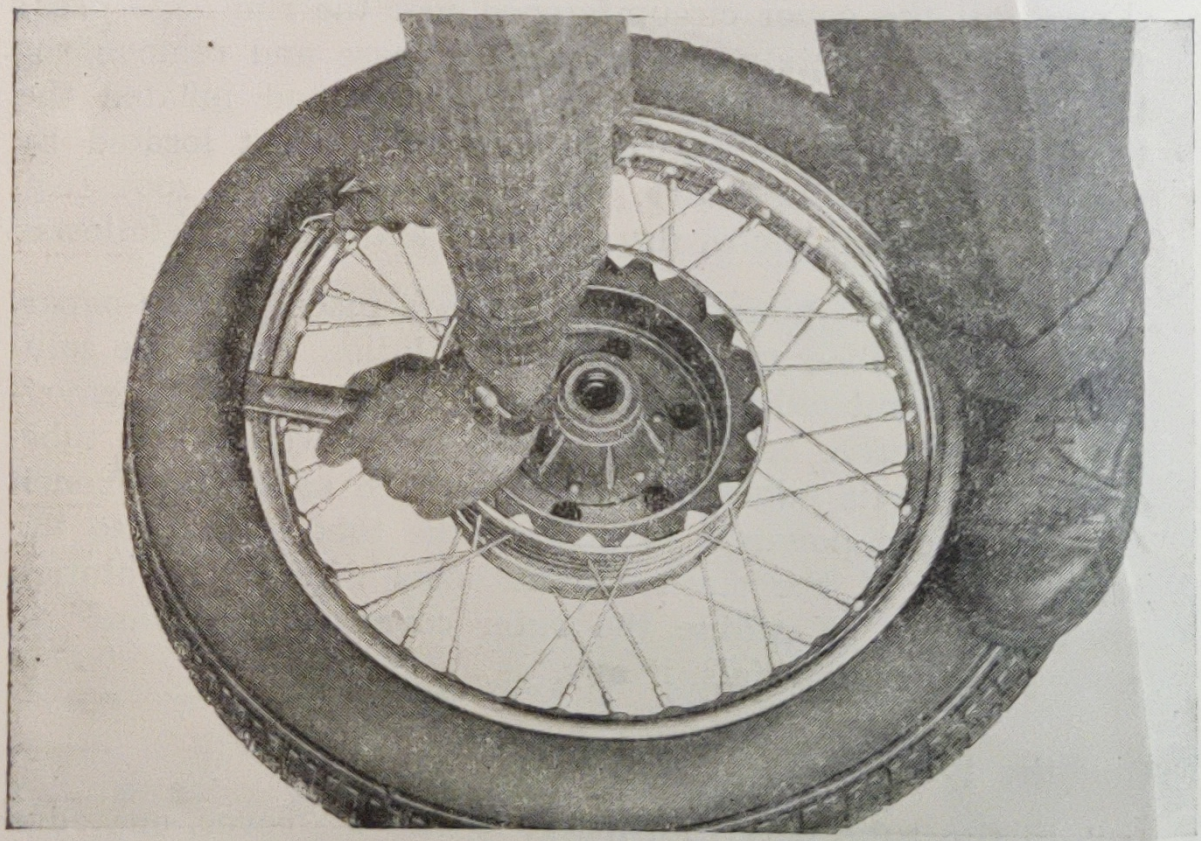


Fig. 16. Correct tyre fitting

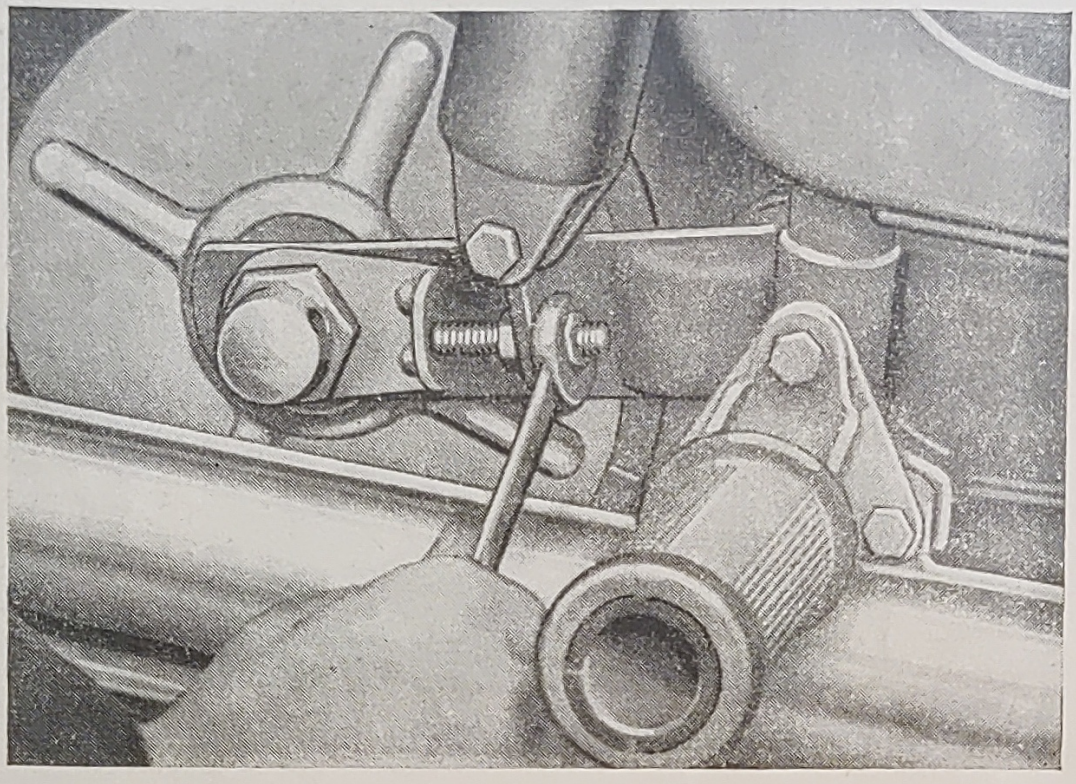


Fig. 17. Adjusting the chain

5. ADJUSTING THE CHAIN

Slacken the rear wheel spindle, i.e. the spindle securing nut on the L. H. side and **the chainwheel sleeve nut** on the R. H. side (slightly tap the spindle as well as the sleeve nut). Then slacken the chain tensioning front lock nuts and tighten evenly the rear adjuster nuts. Never use force when tightening these nuts so as to avoid damaging their threads. Having adjusted the chain tension, retighten the tensioning locknuts properly, then the sleeve nut and finally the spindle securing nut.

Make sure that the wheels are in line. Adjust the rear brake as well, for having moved the rear wheel the brake might be slightly in constant operation, and check the stop switch. Check the chain tension every 1600 km. (1000 miles). Remove the chaincase lid and depress the chain. **The free movement should not exceed 2 cm. (3/4 in.) with the machine laden.**

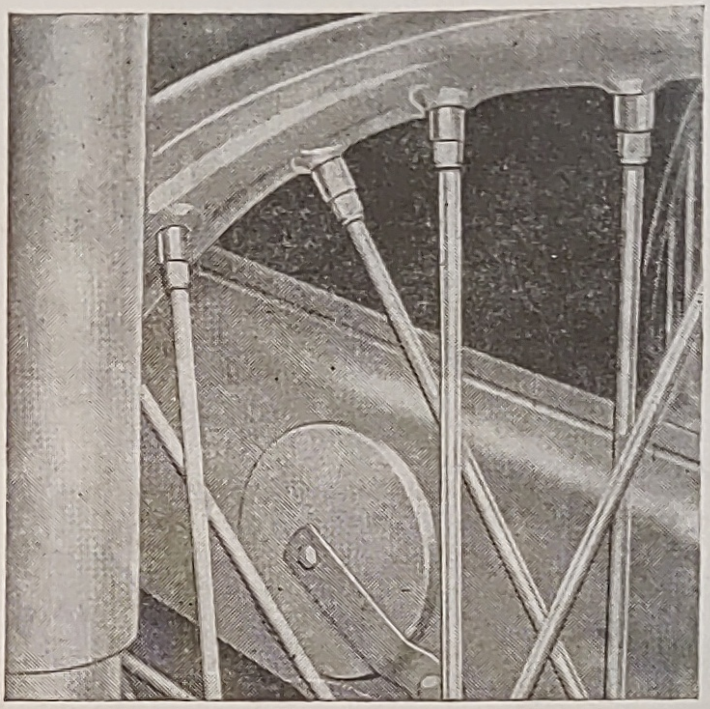


Fig. 18. Chaincase lid

6. ADJUSTING THE CLUTCH

If it is found when riding that the clutch is slipping the fault can be generally remedied by turning the automatic clutch adjusting the screw (in the R. H. cover opening) by 1/6 or 2/6 to the left. It is recommended to adjust the hand and automatic declutching more accurately from time to time in the following manner :

a) Screw the hand clutch adjusting screw on the handlebars in a little thus releasing the clutch lever.

b) Clean with petrol or paraffin any dirt from the automatic clutch cam (6) and the clutch roller (5).

c) With your left hand take hold of the automatic clutch roller (5) and move it towards the cam and back.

d) If there is any movement, turn the automatic clutch adjusting screw (4) to the right, until the space between the roller (5) and cam (6) is approx. 0.1 to 0.3 mm.

e) Adjust the hand declutching by means of the hand clutch adjusting screw on the handlebars so that the handlebar clutch lever has a lttle free movement.

f) Smear both the automatic clutch cam (6) and the roller (5) slightly with grease.

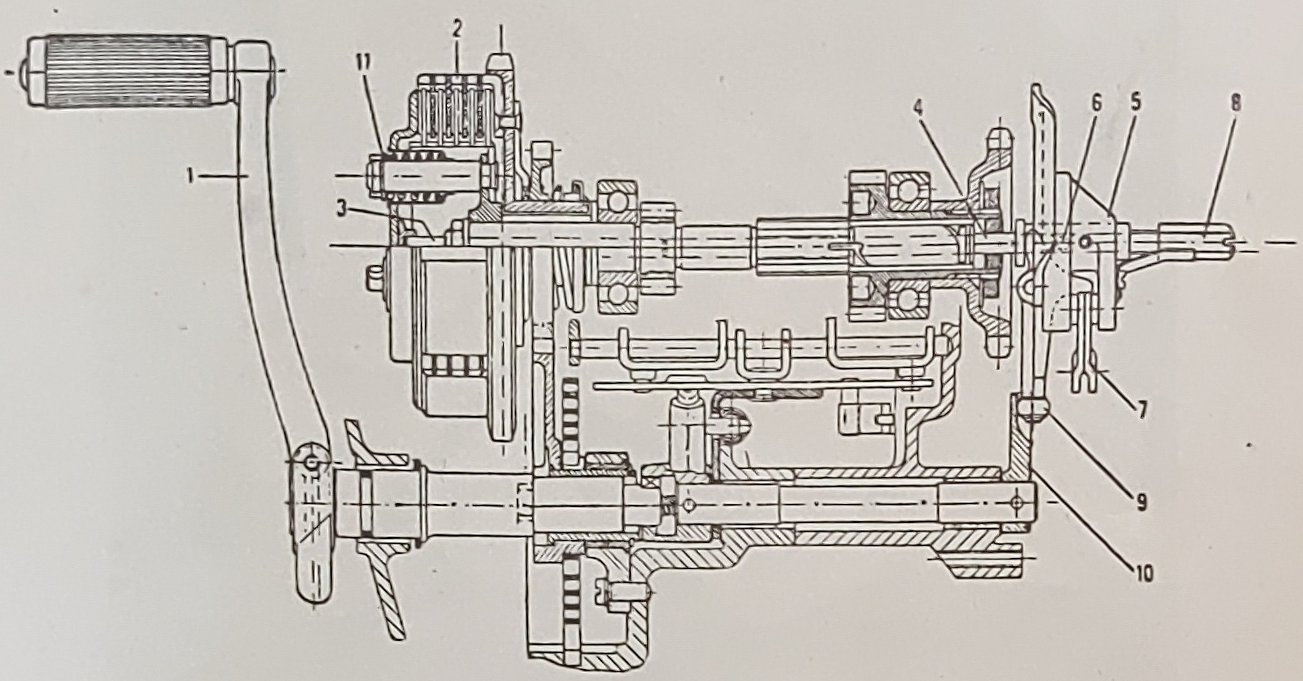


Fig. 19. Clutch operation (automatic) diagram

1. Foot gear change lever
2. Clutch
3. Clutch operating rod with thrust washer
4. Clutch operating rod
5. Clutch control carrier
6. Ball
7. Clutch and lever
8. Automatic clutch adjusting screw
9. Automatic clutch roller
10. Automatic clutch cam
11. Cup

7. CARBURETTER

The carburetter has been correctly set in the works. The jet and the throttle valve have been selected by trail. Therefore do not try to adjust the carburetter, clean it only from time to time. To start the engine easily the idling speed has to be set correctly. This is done by the pilot air screw. To obtain a poorer mixture, unscrew it, to obtain a richer mixture, screw it in. With a poor mixture the engine is difficult to start, has a tendency to back fire heats up and loses output. The exhaust pipe acquires a slight colour tint. Too rich a mixture manifests

itself by heavy engine running, dark smoke coming out of the exhaust pipe, while the inside of the carburetter becomes black.

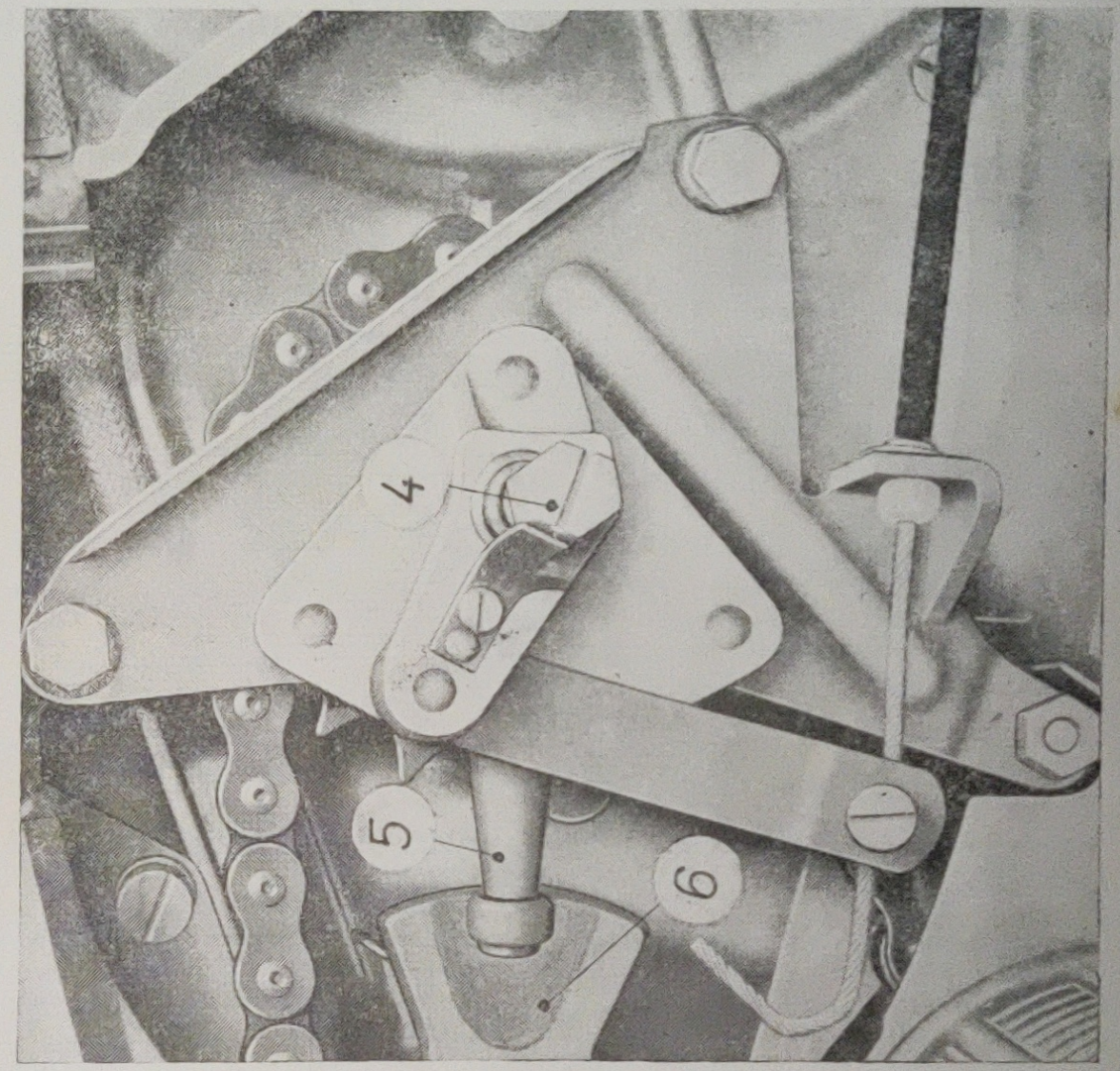


Fig. 20 Adjusting the clutch

4. Automatic clutch adjusting screw
5. Automatic clutch roller
6. Automatic clutch cam

The idling speed of the engine (with fully closed throttle) can be adjusted by extending or shortening of the throttle cable and by securing the throttle valve by not letting it down to its bottom limit with the throttle valve screw (oblique screw located on the carburetter body side). This screw should never be completely unscrewed.

To clean the carburetter dismantle it and wash the parts in clean petrol. Replace damaged or worn parts. The idling

speed passages should be cleaned by passing a fine horse hair through them. Never use wire or hard tools to clean the jet as this might damage the delicate jet hole.

The Idling jet (2) is screwed in from the right above the pilot air screw (3). To clean the jet unscrew screw (2) and blow the jet through.

The main jet of the carburetter is located in the bottom part of the needle jet. It is accessible after unassembly of the carburetter and removing of the bottom closing screw (1).

The induction silencer with air filter is accessible after the dual seat has been removed .

VERY IMPORTANT :— To get the maximum benefit from the motorcycle, it is strongly recommended that the metal air filter be removed and washed in clear petrol every 1000 Km. It should then be moistened with thin motor oil and refitted. This moistening is very essential as it will prevent fine dust particles from passing through the filter and working its way into the engine and causing damage to the vital working parts. Running on dusty roads makes more frequent cleaning of the metal air filter necessary (preferably every 500 Km.). The air filter is accessible after freeing the two securing clips and the air cleaner top.

It is necessary to check from time to time the hole connecting the compartment under the carburetter with the space under the R. H. engine cover to see whether it is not chocked and clean if required. The overflowing fuel from the carburetter resulting from the carburetter flooding has to have possibility to drain.

Note : The carburetor flooding just serves the purpose of rising the fuel level in the float chamber and this (flooding) should be carried out slightely only to facilitate starting **when engine is cold.** Otherwise it is quite unnecessary and at times may result in the fuel overflowing into the induction silencer where there are possibilities of its getting accidentally ignited.

Carburetter setting

	Main Jet	Idling Jet	Needle position	Pilot air screw slackened by
For running-in	92	45	4th notch from top	¼ turn
After running-in	92	45	3rd notch from top	½ turn

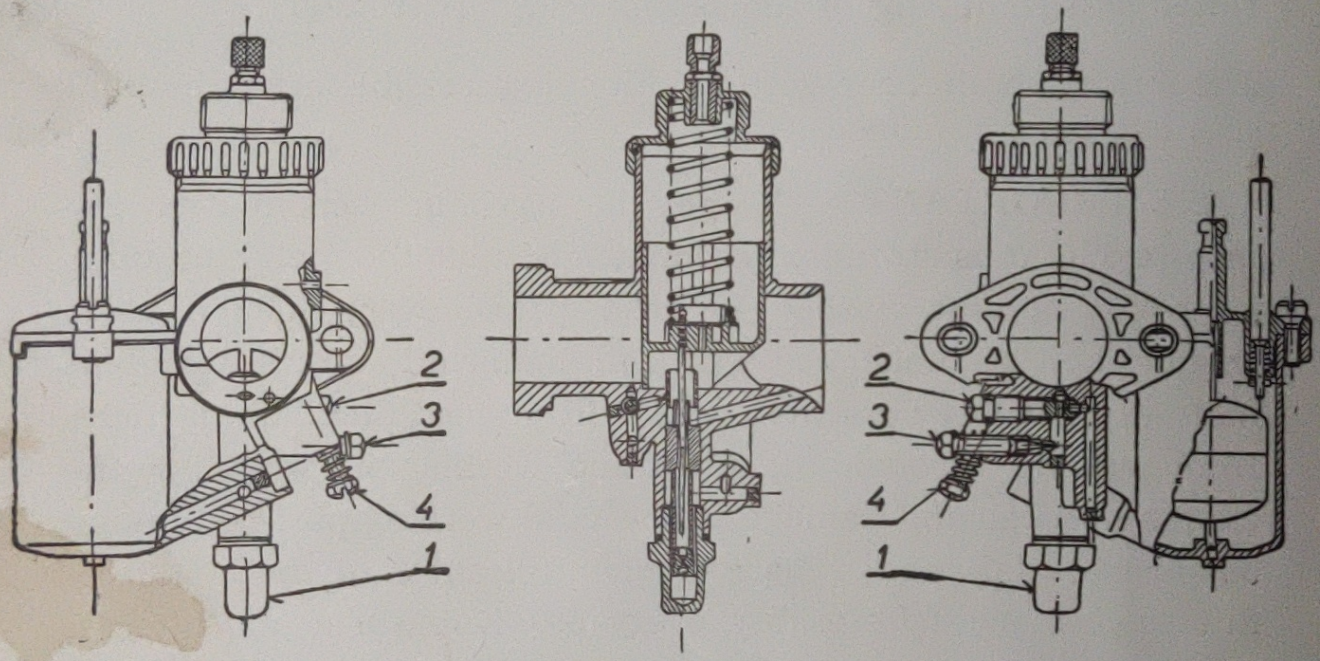


Fig. 21. Carburetter, flange type
1 — Closing screw
2 — Idling jet
3 — Pilot air screw
4 — Throttle valve screw

Carburetter 2926 SBD for the 250 c. c. model

8. MAINTENANCE OF ELECTRICAL EQUIPMENT

Examine **the leads from time to time** and wind insulating tape round insulation cracks. Damaged insulating can cause short circuits possibly entailing serious damage to the battery.

Clean **the sparking plug** preiodically. Carefully scrape off any carbon deposits, set the contact gap to 0.45 mm. (0.018 in.) by carefully bending the contact to the plug body.

The fuse is located in a bakelite case in the L. H. box next to the battery. When replacing never use a fuse stronger than

15 Amps. To adjust **the stop switch** slacken the screw by removing the bakelite body of the switch to the right or to the left as required. Always check the stop switch after adjusting the rear brake.

Maintenance of the mag-dynamo : Check the mag-dynamo after first 200 km. (120 miles) and if necessary adjust the contact breaker point gap and ignition advance. See para "Ignition timing".

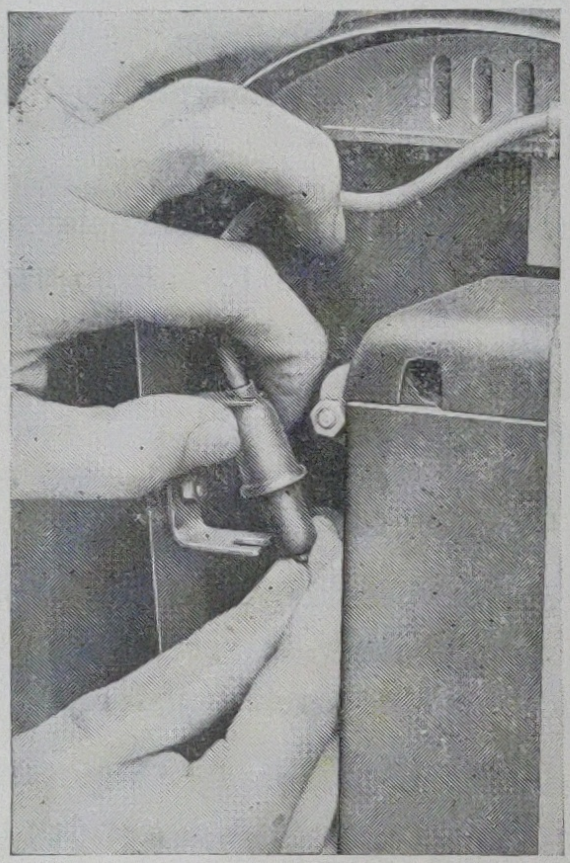


Fig. 22 Removing the fuse

Setting the Ignition Timing :

a) Remove the sparking plug from cylinder and insert in the sparking plug hole or screw in the gauge (indicator with thread M 14 × 1.25, a special feeler gauge or a straight piece of wire).

b) Find the T.D.C. of the cylinder by rotating the crankshaft to the right (direction of rotation of the running engine).

c) In this position set the contact breaker points gap (by means of the adjusting screw) between 0.3 and 0.4 mm. (0.012 and 0.016 inch) using a feeler gauge.

d) By rotating the crankshaft to the left (i.e. in the opposite direction of engine rotation) bring the piston down by 2.5 to 4 mm. (this can be recorded on the special gauge screwed on into the sparking plug hole).

e) Check again in this position the contact breaker point gap which should not exceed 0.05 mm. (0.0019 in.). Use the feeler gauge or a piece of cigarette paper both of which should be sliding fit.

f) Should the gap be smaller or larger, slacken the two bolts securing the stator complete to the crankcase and restore the correct gap, i.e. 0.05 mm. (0.001 in.) by rotating the complete stator to the left (making the gap larger) or to the right (making the gap smaller).

g) After setting re-tighten the stator bolts.

Warning : The contact breaker base plate should **never** be slackened or rotated in order to set the contact breaker gap. Its position should never be altered under any circumstances.

Battery : The maintenance is simple. Maintain the electrolyte level (it should be above the plates and separators in all cells) its density and keep the battery charged. Check the electrolyte level frequently, at least once a fortnight. Add distilled water if no acid has been spilled; if it has been spilled top up with properly diluted sulphuric acid. Top up if possible before a trip and do not leave a freshly filled battery standing longer than 10 hours. Have the electrolyte density checked every 3 months in a specialist workshop. The correct density (30 to 32 deg. Be, specific gravity 1.26 to 1.285) is of importance for proper charging and protect the battery from freezing.

If the motorcycle is not in use for any length of time, remove the battery, store it in a dry place and give it as much care as you would if it were in operation, i.e. check the density, top up with distilled water and recharge. It is advisable, at least every 2 months, to discharge it by one half down to 1.8V per cell and recharge it to its full capacity using 0.5 Amps current on both occasions. When fitting the battery to the motorcycle connect its **plus pole to the frame.** A wrongly connected battery would result in the fuse and rectifier burning out and also result in heavy discharge of the battery thereby damaging its cells and seperators. Keep the battery terminals clean. A light grease coating will protect the terminals from corrosion by the acid.

The headlamp beam is adjusted by tipping the reflector by means of the adjusting button in the top portion of the headlamp rim. After releasing (loosening) the button push it forwards (backwards) as long as the headlamp beam is regulated. Having correctly set up the headlamp beam tighten again the adjusting button.

9. DECARBONISATION

After the first 3000 km. (2000 miles) clean the exhaust silencer cores. Clean again after every 5,000 km. (3,000 miles) at the latest. Unscrew the fastening screw with the nut from the side of the silencer rear end and remove the short rear tube. Using a suitably bent piece of wire or the hook spanner for silencer nuts pull out the inner tube and clean both thoroughly to remove all carbon deposits. It is recommended to remove carbon deposits from the engine and exhaust silencers every 5000 to 10000 km. (3000 to 6000 miles) (for dismantling instructions see Part III, para 6). Burnt fuel residues (carbon deposits) cause a drop in the engine output as well as excessive heating of the engine.

Remove the carbon from the piston, cylinder head and exhaust ports by careful scraping. At the same time remove carbon deposits from piston ring grooves (preferably with an old broken piston ring). When replacing the piston rings fit the rings into the same grooves in which they were before being removed. Having scraped off the carbon, polish the parts in question and before reassembling wash them in clean petrol or paraffin.

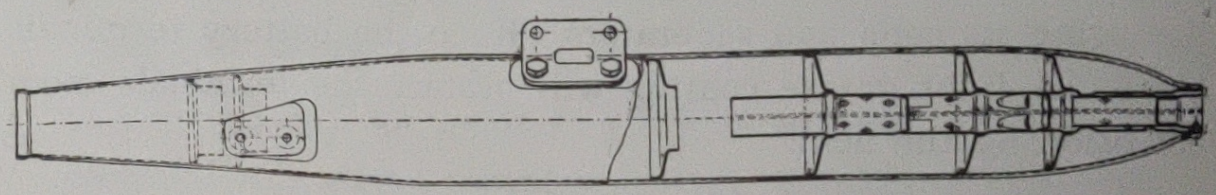


Fig. 23 Exhaust Silencer—sectional view

III. DISMANTLING AND ASSEMBLING WITHOUT THE AID OF SPECIAL TOOLS

1. REMOVING THE FRONT WHEEL

Slacken the brake cable, unscrew the spindle nut and remove the spring washer. Slacken the tightening screw on the L. H. slider botton end. Remove the spindle and the wheel.

When assembling after pushing home the spindle, putting the spring washer into position (it must not be forgotten!) and having placed the lock nut depress and release the front fork several times. Only then tighten the lock nut and L. H. slider bottom end with the screw. Check the suspension once more. Fit the brake cable and adjust the brake so as to allow free rotation of the wheel.

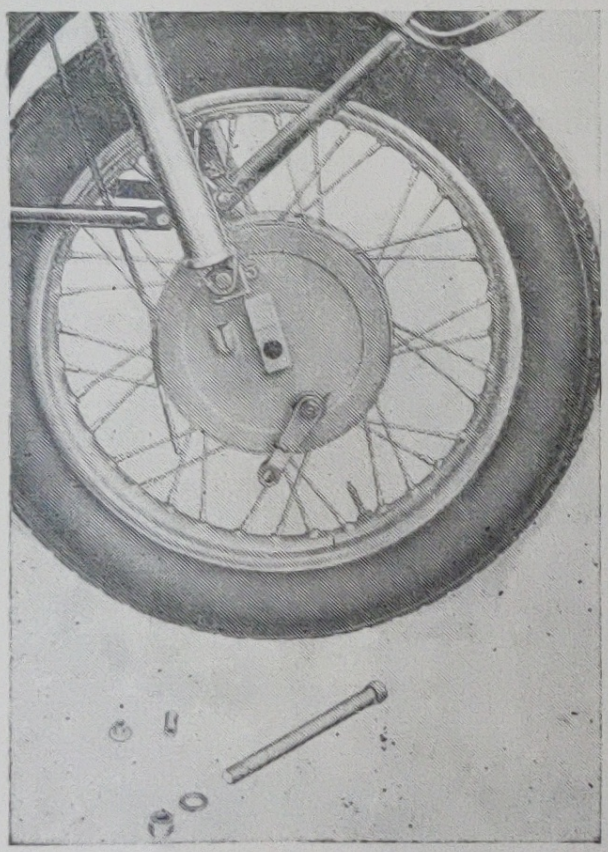


Fig. 24 Removing the front wheel

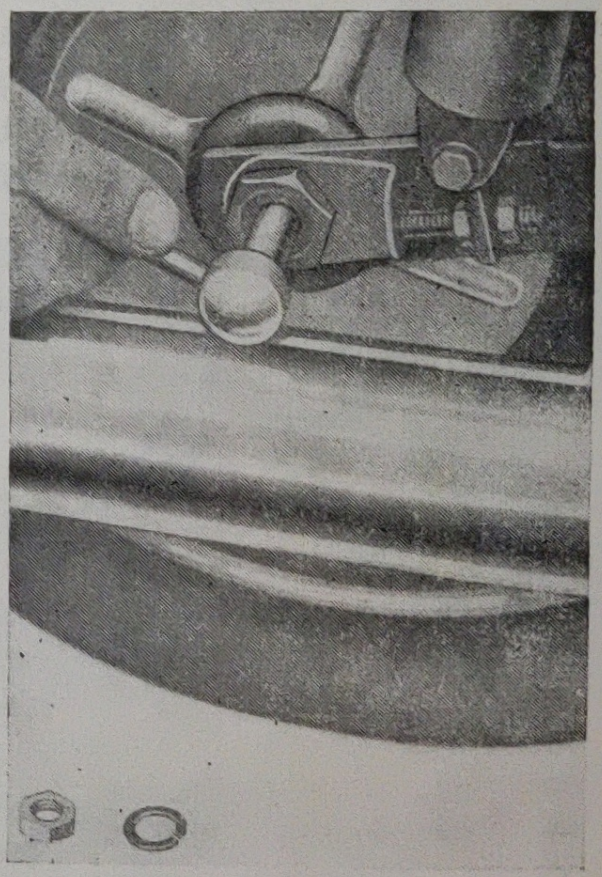


Fig. 25 Taking out the rear wheel spindle

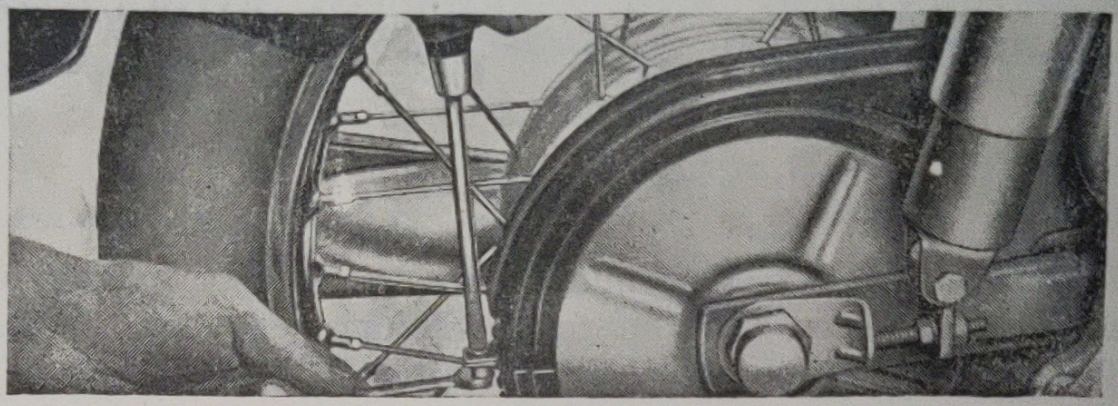


Fig. 26. Dismantling the chaincase

2. REMOVING THE REAR WHEEL

Release the rear brake cable, slacken the spindle nut, remove the spring washer, loosen the wheel spindle and pull it out to the R. H. side. On the L. H. side remove the brake reaction bracket, slide the wheel off the driver splines and having inclined the motorcycle to one side remove the wheel.

When assembling after pushing back the spindle, replace the spring washer (do not omit) screw in the nut and tighten it fast. Fit the rear brake cable and adjust the brake so as to allow free rotation of the wheel.

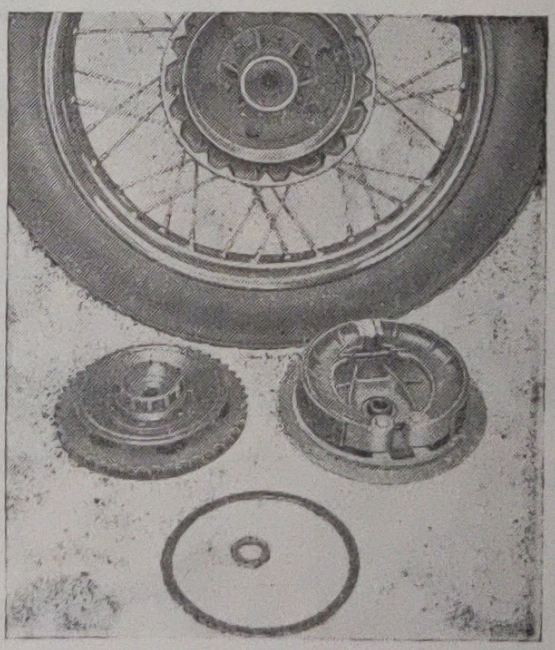


Fig. 27. Rear wheel brake drum—exploded view

3. REMOVING THE CHAINCASE AND THE CHAIN

To make the dismantling of the chaincase easier remove the rear wheel and the R. H. crankcase cover. Disconnect both chaincase halves and open the chaincase (Warning! — First remove the split pin from the screw.) Rotate the chain so that the connecting link reaches the rear chainwheel release the clip and remove the connecting link using pliers or a screwdriver. Pull out the chain and take in turn the chaincase halves out rearwards.

When replacing the chain proceed as follows: slip the disconnected chain on the gearbox sprocket and fit a piece of wire to the end links of the chain. Using the wire pull the chain through the rubber guide in the bottom chaincase half placed in position. Slip the chain on the rear chainwheel and fasten with wire to prevent it from fallig into the chaincase. Using the wire pull the other end of the chain through the rubber guide in the chaincase top half placed in position. Slip the top end of the chain over the rear chainwheel and connect the two chainends with the connecting link and clip. The open end of the spring clip should face the opposite direction of the chain rotation. Insert the rubber seal between the top and bottom halves of the chaincase, fasten the halves together by means of the bolt and nut and **secure with the split pin.**

When replacing the chain it is not necessary to dismantle the chaincase. Connect the new chain to the old one and with its help pull the new chain to its operational position.

4. REMOVING THE REAR CHAINWHEEL

This operation can be carried out after the rear wheel and the chaincase have been removed. Slacken the chainwheel nut (32) and remove the chainwheel together with the back plate.

5. REPLACING THE WHEEL BALL BEARINGS

Remove the brake drum back plate with the brake shoes. Remove the seals from both sides of the wheel hub and on the side

of the splined driver remove the bearing circlip. From the opposite side push the other bearing using a piece of tube until the unlocked bearings fall out. Push the remaining bearing out to the opposite side and remove the spacer. Warning! Before removing the front wheel bearings the hub cover (of the splined driver) should be removed first. Press in the new bearings by applying pressure to the outer bearing race, using a piece of tube. When replacing the rear chainwheel bearings proceed as follows : Remove the back plate and push out the spacer. Remove the seal, bearing circlip and bearing from the L. H. side using a piece of tube. Press on the new bearing using again preferably a piece of tube of a diameter corresponding to the bearing outer race diameter.

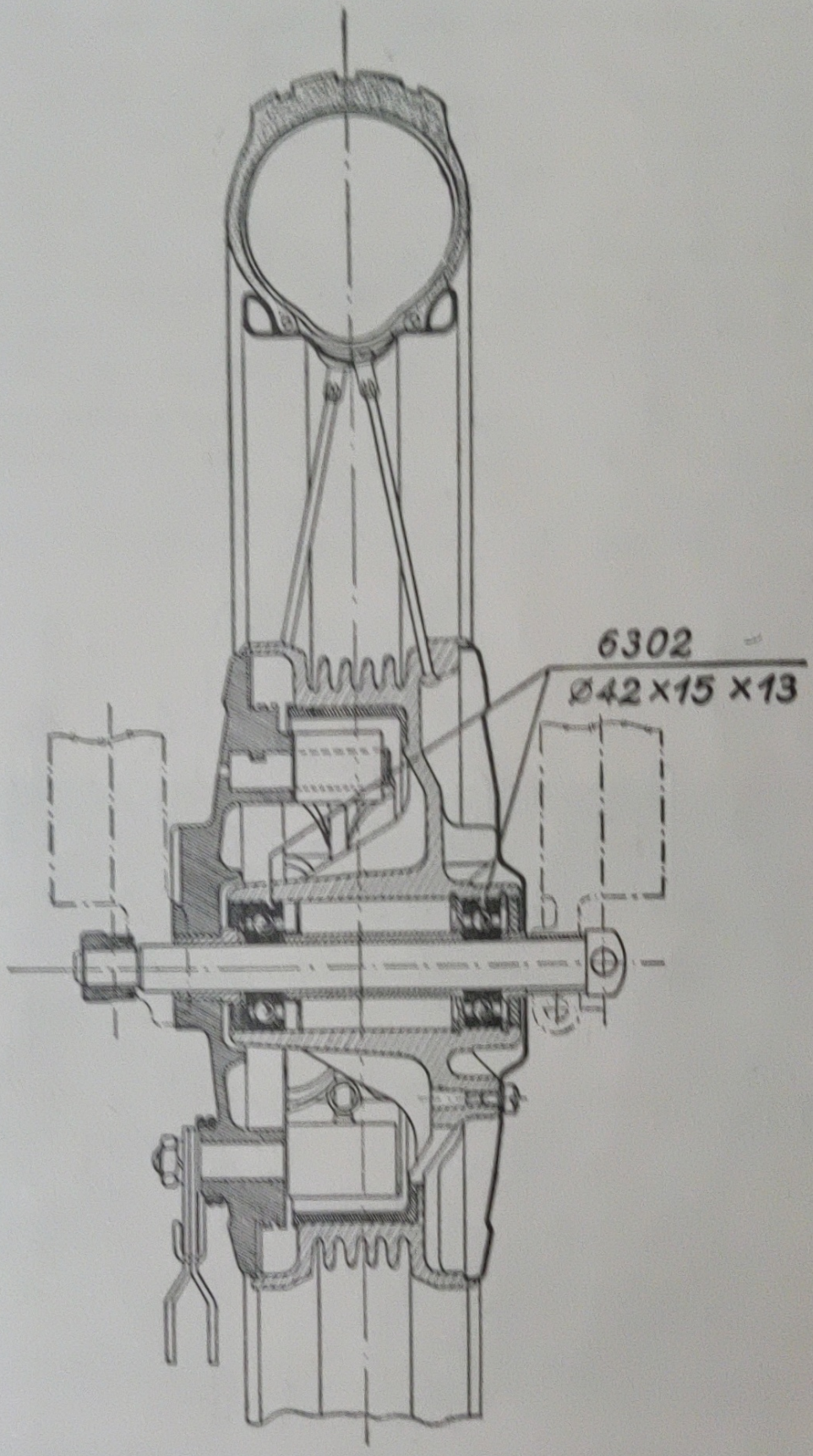


Fig. 28. Front wheel — sectional view

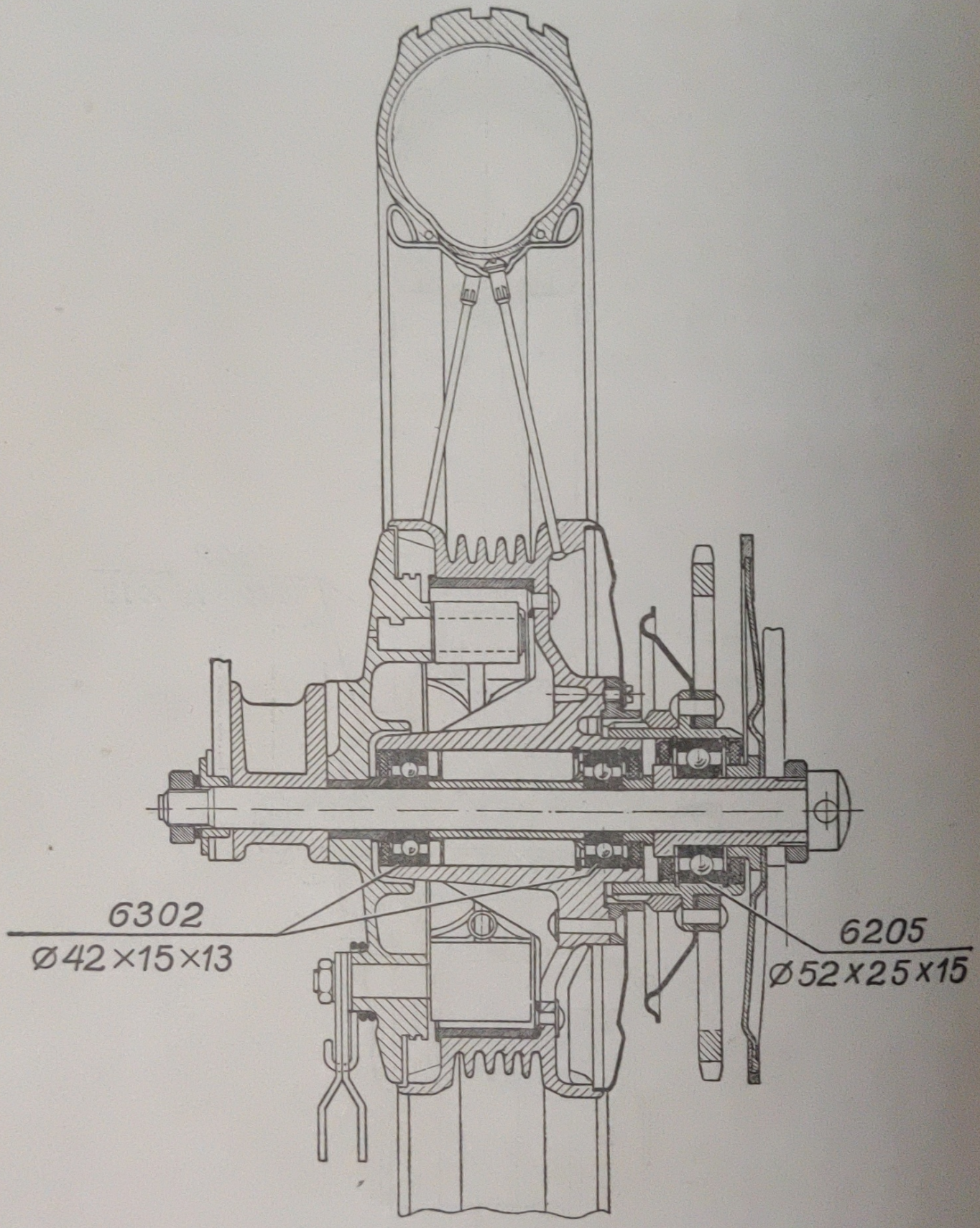


Fig. 29 Rear wheel — sectional view

6. REMOVING THE CYLINDER HEAD AND BARREL

Disconnect the fuel pipe (from the carburetor to the fuel tank) and remove the Dual Seat and the fuel tank (for dismantling instructions refer to para 13 & 14). Disconnect the Ignition coil and sparking plug leads and remove the H. T. Ignition coil. Disconnect the exhaust pipe, unscrew the four nuts holding the cylinder head to the cylinder barrel and remove the cylinder head. By means of the kickstarter bring the pistons into the B.D.C. position and push the cylinder barrel upwards.

Note : If it is difficult to remove the cylinder head lever it carefully by placing a screwdriver between the cylinder head and cylinder fin at the spot where the fins join. After dismantling cover up the crankcase opening to prevent dirt entering.

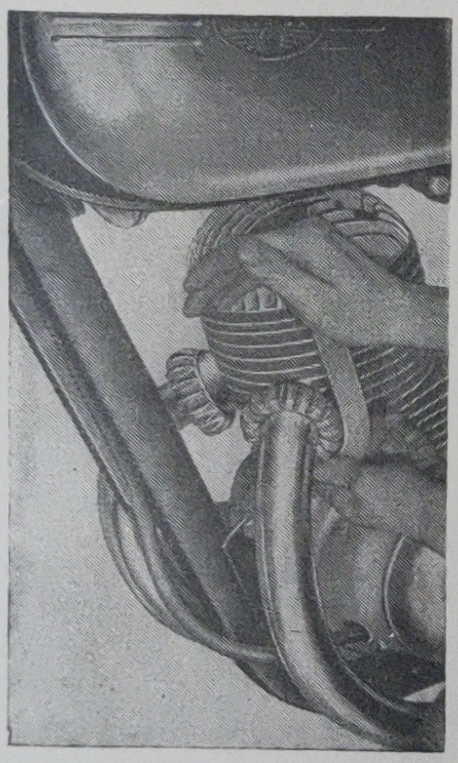


Fig. 30 Disconnecting the exhaust pipes.

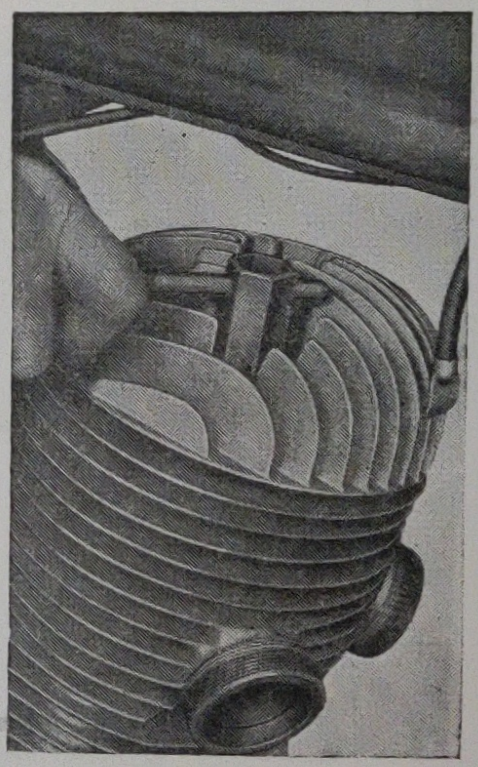


Fig. 31 Removing the cylinder head

7. REPLACING THE PISTON RINGS

The piston rings have to be replaced should the gap exceed 0.8 mm (0.031 in.), the correct gap being 0.2 mm (0.008 in.). To check the gap width insert the removed piston ring into the cylider top part (approx. 10 mm. (0.39 in.) deep), and check gap by means of a feeler gauge. The best way to remove the position rings is to use three thin steel strips. Insert one strip under the piston ring in the middle and the two others under the piston ring ends. To replace the piston rings proceed in the same manner.

8. REMOVING THE CARBURETTER

a) Disconnect the fuel pipe where it joins the fuel tank.
b) Loosen the carburetter cover unscrewing the fastening nut off the mixing chamber.
c) Remove the cover and slacken the flange fastening nuts.
d) Push the carburetter out rearwards.
e) When removing the carburetter leave the induction silencer in its place disconnecting only the rubber sleeve.

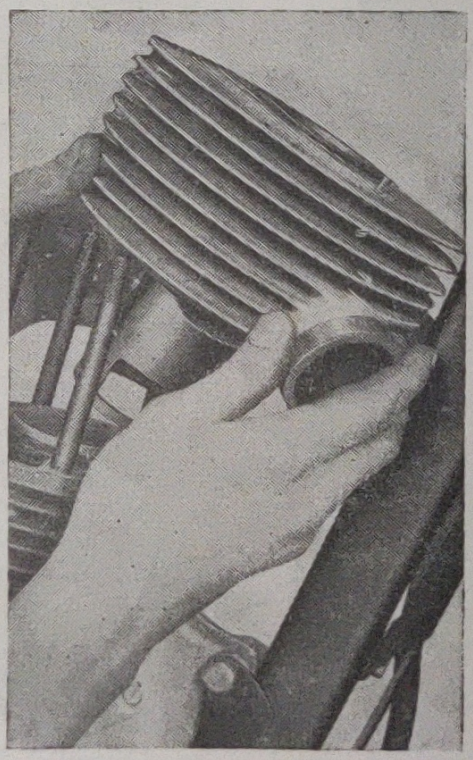


Fig. 32 Removing the cylinder barrel

9. DISMANTLING THE CLUTCH

After removing the L. H. crankcase cover the clutch can be dismantled. Preferably use the double ended spanner (10) to press in the cups which hold the lock pins. Press in the cups one after other and remove the pins in the same order (three times). The clutch has five plates with cork inserts and four metal plates (plus one pressure plate). When reassembling insert first the plate with a cork insert which was under the pressure plate.

10. DISMANTLING THE HEADLAMP

The headlamp consists of three main parts : rim with reflector, bottom and top nacelle.

Remove **the rim with reflector** after unscrewing the securing screw M 5 from the rim bottom, swing the rim upwards and disconnect the joint with leads.

Fig. 33 Fitting the piston rings

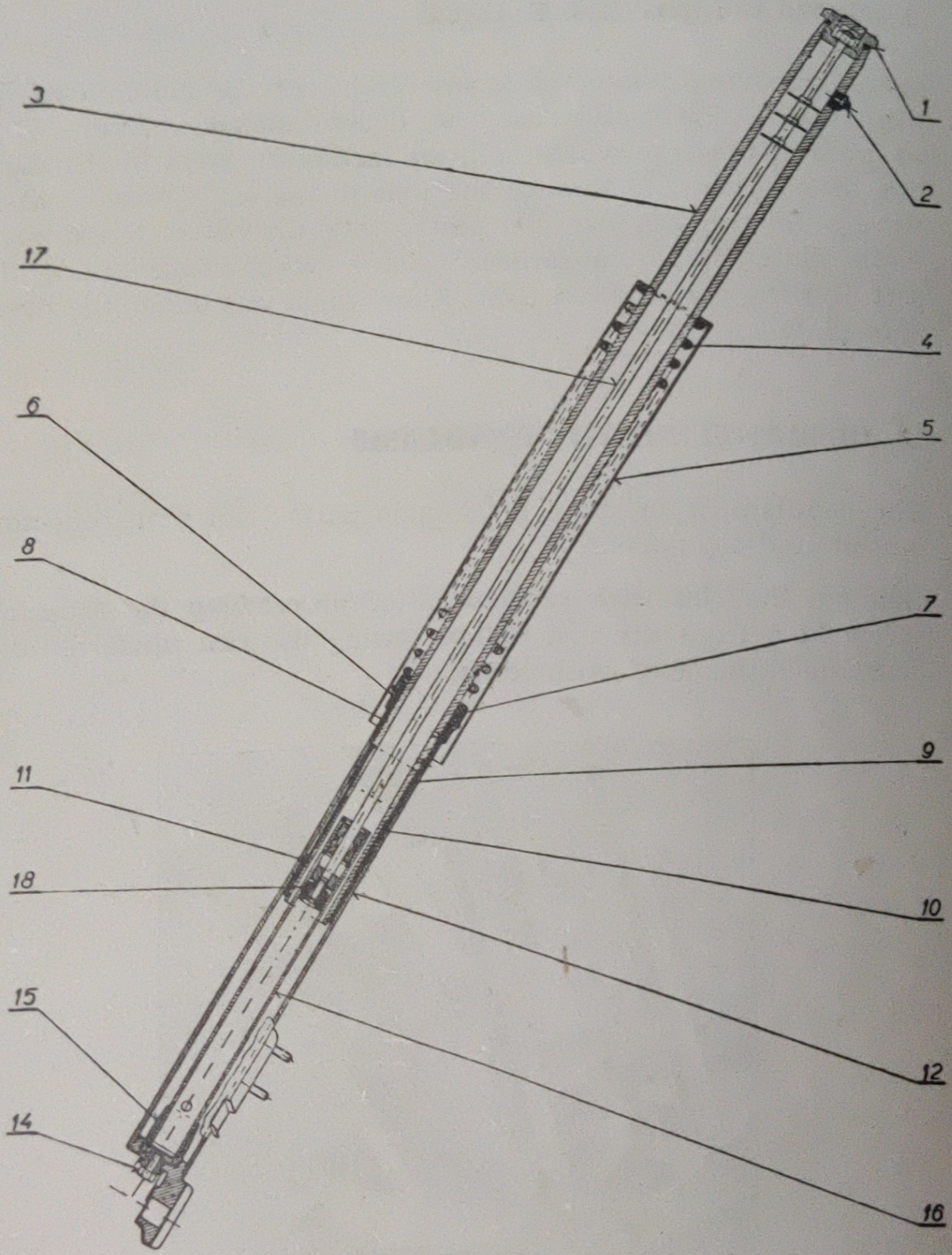


Fig. 34 Front fork — sectional view

1. *Top nut*
2. *Valve*
3. *Tube*
4. *Spring*
5. *Spring cover*
6. *Fibre ring*
7. *Slider nut*
8. *Slider bush*
9. *Top bush*
10. *Spacer*
11. *Bottom bush*
12. *Slider*
14. *Draining screw*
15. *End tube with pin*
16. *Damper tube*
17. *Rod*
18. *Damper piston*

Remove **the top nacelle** after releasing the catches inside the nacelle and unscrewing the speedometer drive union nut.

Remove **the bottom nacelle** after removing the handlebars (see para 12), disconnecting the leads and the clutch cable, unscrewing the steering head nut (41) and unscrewing the plug screws (32). Remove now the fork head lug and the bottom nacelle can be pushed out.

11. DISMANTLING THE STEERING HEAD AND FORK LEGS

Remove first the top nacelle, handlebars, unscrew the nuts 41 and (32) and release the fork head lug by tapping. By using a special box spanner partly unscrew the nut holding the bearing cup. In this manner it is possible to lubricate the top

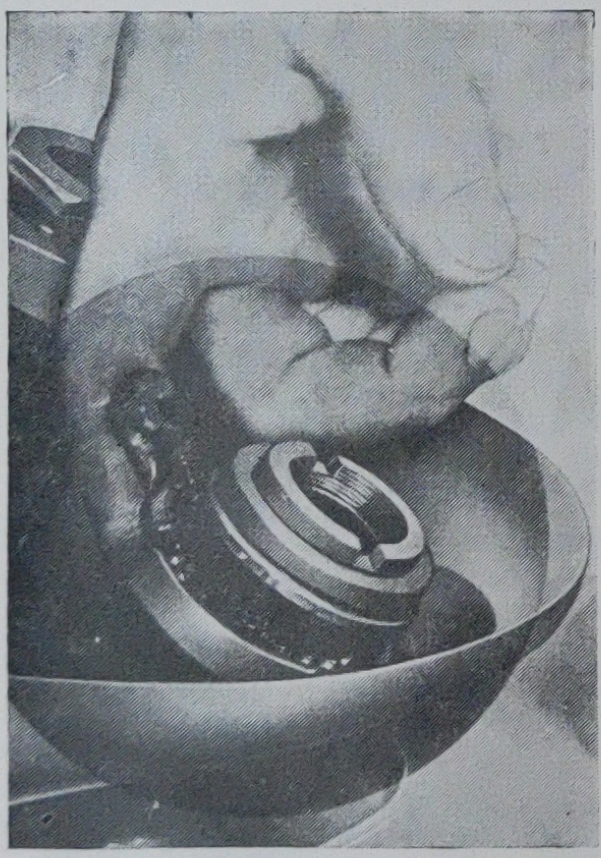


Fig. 35 Lubricating the steering head bearing balls

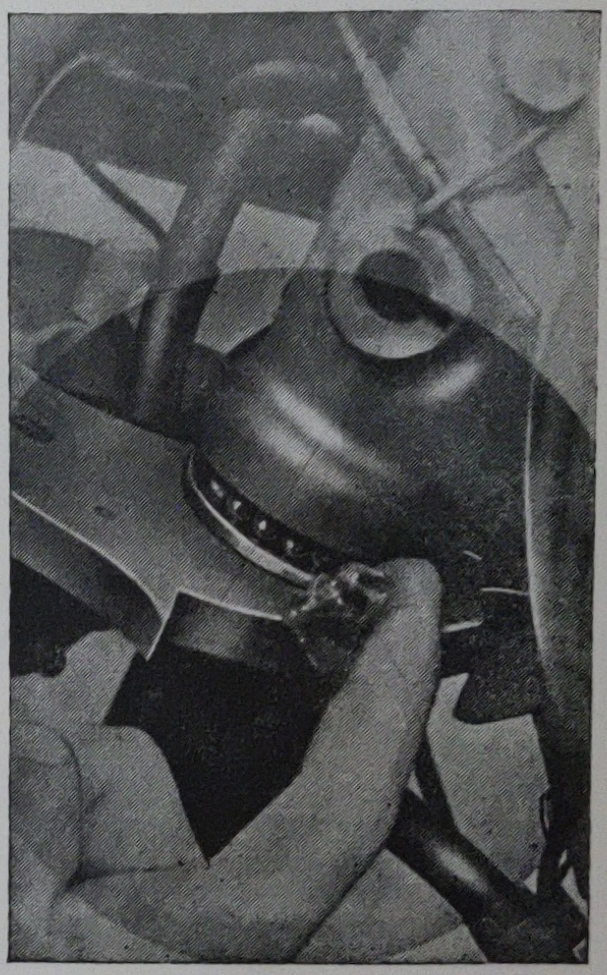


Fig. 36 Lubricating the steering head bearing balls

bearing balls. Push the steering head column downwards and then the bottom bearing can be lubricated. When completely dismantling the fork unscrew the nut fully; unscrew the valves from the fork tube top portion; slacken and remove the steering lug and stem pinch bolts, and push out one after the other the fork legs and the steering head column.

When dismantling the damper only proceed as follows: unscrew the valves (2), the draining plug (14) and the top nut (1). Pulling the nut (1) and the rod (17) remove the complete damper from the tube (3) including the plunger (18), the tube (16) and the end tube (15). When refitting the damper into the tube (3) take care that the pin in the end tube (15) engages correctly into the opening in the slider bottom (12) as otherwise the damper would sit slantwise and would not work properly.

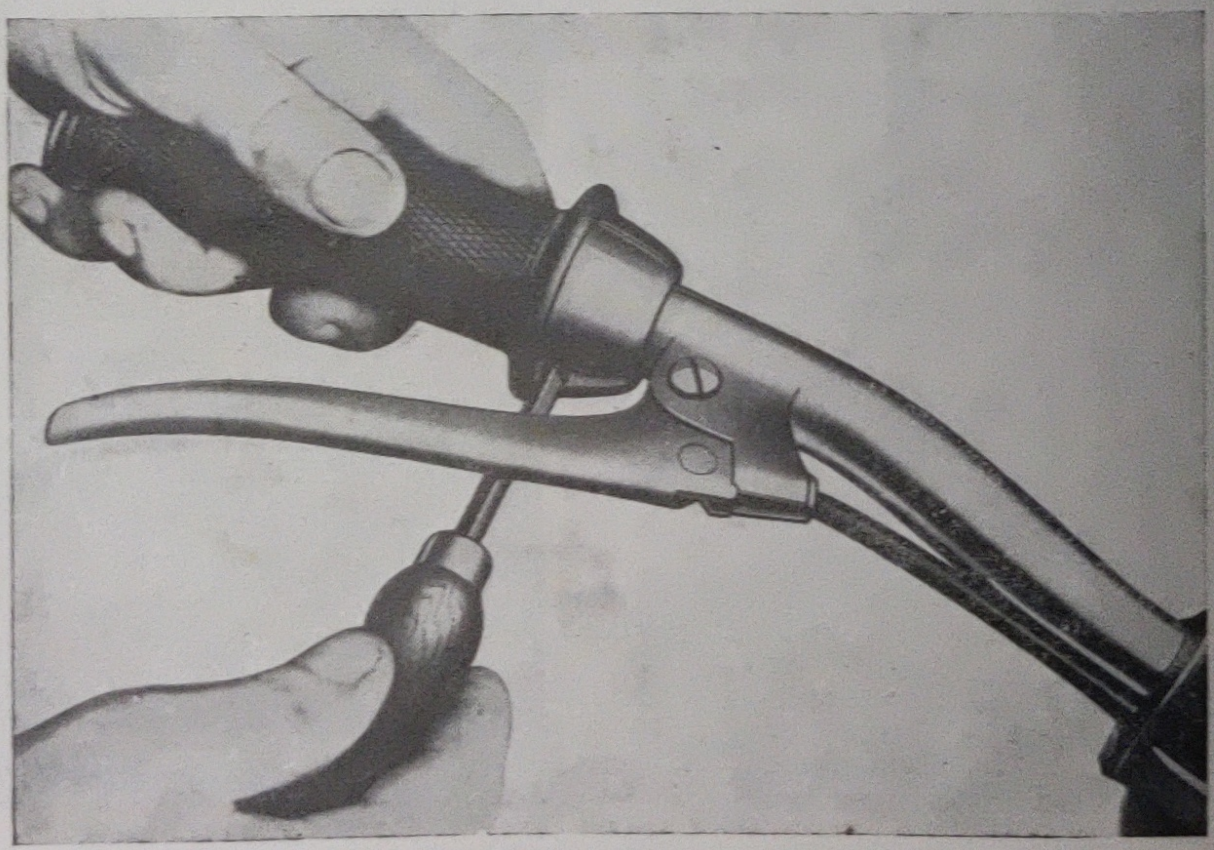


Fig. 37 Adjusting the twist grip

12. HANDLEBARS—TWIST GRIP

The handlebars are fastened by two clamps locked by four screws and two nuts M 8. Four spring washer complete the set. The handlebars can be removed after easing the headlamp rim with reflector and after removing the top nacelle (para 10), and slackening the clamp locking screws. The twist grip can be pulled off after unscrewing the countersunk head screw through the opening in the rubber grip and plug. The twist grip rotation can be adjusted by the screw in the retention cap.

13. REMOVING THE DUAL SEAT

Slacken the screw M 6 through the opening in the cowl on the L. H. side. Lift the front of the dual seat and by pulling it forwards and upwards remove it. Underneath the dual seat the induction silencer, rectifier as well as an auxiliary tool box are located.

14. REMOVING THE FUEL TANK

Disconnect the fuel pipe and unscrew two screws M 8 x 10 securing the front clamp ears and the through bolt with nut (14/12) securing the rear clamp ears. Do not forget to replace the three spring washers when reassembling.

15. REMOVING THE TOOL AND BATTERY BOXES AND COWLS

The tool and battery boxes and cowls are held by three screws to the frame of the machine. Before dismantling do not omit to remove from the R. H. box the stop switch.

Unscrew the following parts from the R. H. side; nut (12) and through bold (14) securing the fuel tank rear clamp ears, the bolt (10) securing the rear wheel brake control cable clamp and bolt (10) and nut near the pillion footrest. From the L. H. side unscrew: the front footrest bolt (12) as well as the bolt (10) and nut near the pillion footrest.

Now unscrew the remaining screws securing the cowls and remove the cowls.

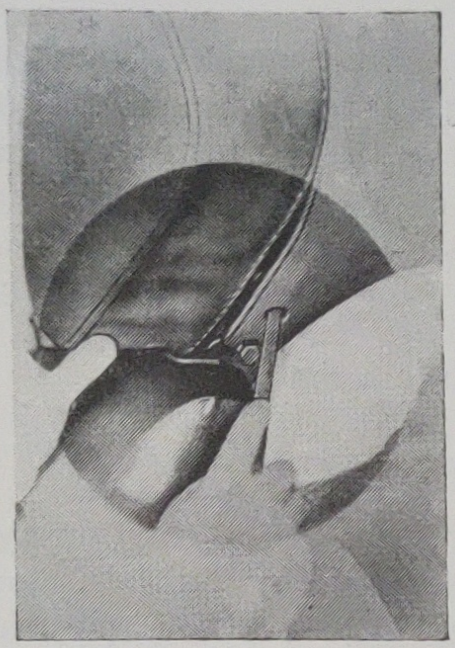


Fig. 38 Removing the dual seat

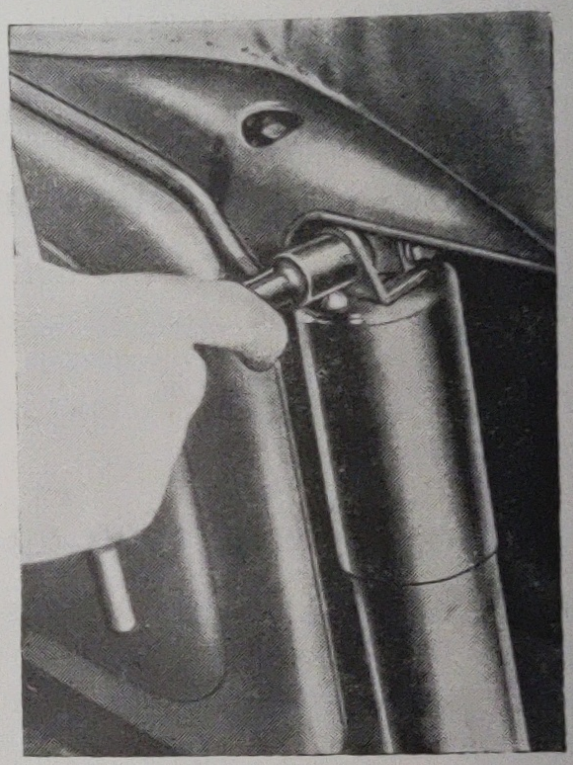


Fig. 39. Disconnecting the rear suspension damper top bracket

16. DISMANTLING THE REAR SUSPENSION

Having unscrewed two screws M 8 remove the suspension unit from its brackets in the frame and pivoted rear fork. As compared to the former the new type damper has increased damping efficiency, and is so designed that no topping up with oil is required.

It is recommended to have any possible repairs, cleaning the interior etc., done in a specialist workshop.

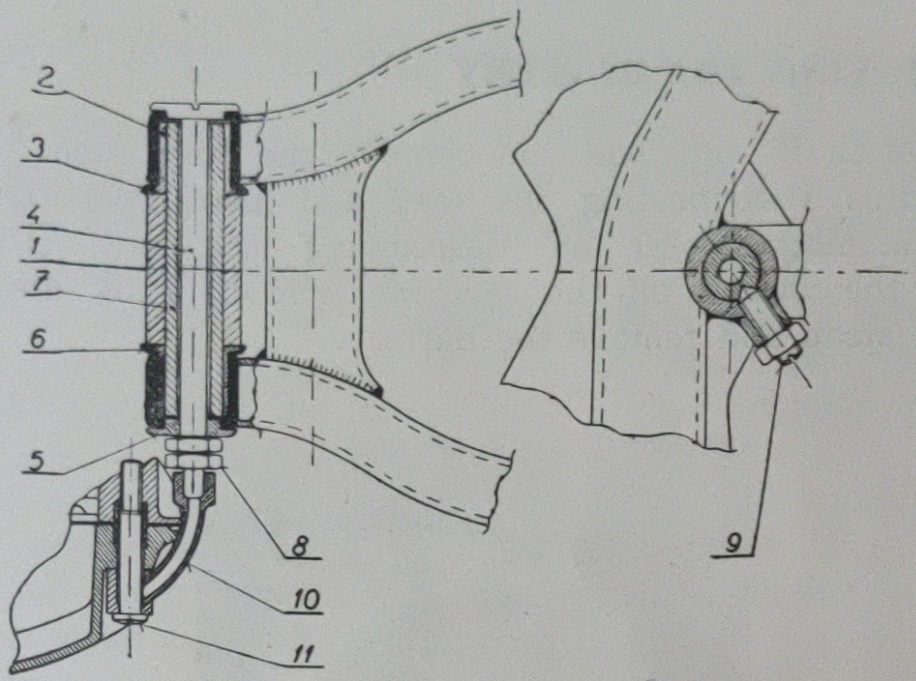


Fig. 40 Pivoted rear fork bushing — sectional view

1. Pivoted rear fork
2. Bush
3. Rubber seal
4. Bolt
5. Thrust washer
6. Cup
7. Fork pin
8. Nut
9. Locking bolt with nut
10. Lubricating Pipe
11. Screw M8×55

17. PIVOTED REAR FORK

Before removing the pivoted rear fork the following operations have to be carried out :

Remove the cowls (para 15), the suspension dampers (para 16), the rear wheel (para 2), chaincase (para 3) and the rear chainwheel (para 4), and exhaust silencers. After removing these parts unscrew the bolt and nut on the tube bottom and the two nuts (17) on the L. H. side of the frame. Push the released bolt out to the R. H. slide and remove the thrust washer. Using a puller pull out the fork pin. It is recommended to have this repair done in a specialist workshop equipped with special tools.

18. REMOVING THE BATTERY

Open the L. H. side box and remove the fuse case from its holder thus disconnecting one lead and disconnect the other lead (earthing + pole) by unscrewing the nut (10) and pushing the washer off the earthing screw. Pull down the securing strap and remove the battery.

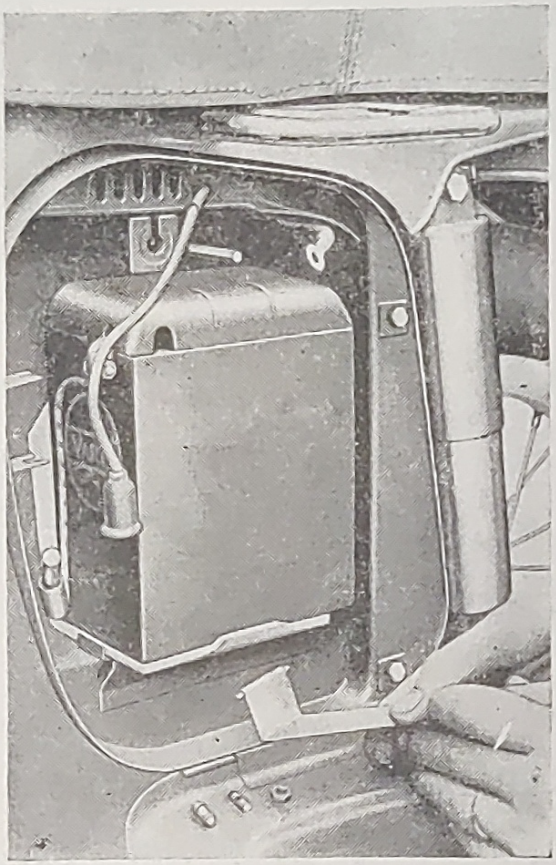


Fig. 41 Removing the battery

19. DISMANTLING THE SWITCH BOX

Dismantle the switch box only if absolutely necessary. Free and lift the headlamp reflector and remove the speedometer head. After freeing the headlamp top nacelle the switch box located in it becomes accessible.

20. REMOVING THE ENGINE FROM FRAME

Disconnect : 1. the fuel pipe, 2. throttle and clutch cables (in the engine), 3. the speedometer drive (the screw in the bottom part of the L. H. half of the crankcase), 4. the sparking plug lead and 5. the exhaust pipes

Remove : 1. the dual seat, 2. the chaincase, 3. the L. H. battery box, 4. the R. H. engine cover, 5. the chaincase extension, and 6. disconnect the leads from the mag-dynamo terminal base.

Having removed the dual cowl bottom the rear engine bolts have become accessible; slacken the bolts and remove them. Then slacken and remove four front bolts fastening engine to frame and remove the engine to the L. H. side.

21. REMOVING THE R. H. AND L. H. ENGINE COVERS

Remove the **R. H. Cover** when clutch adjustment (for thorough adjustment see Part II, para 6) or ignition setting is required. Unscrew the two screws and remove the cover.

Before fitting the cover clean the seating faces off mud. Tighten the securing screws evenly and check the cover front part to seat down properly (in order to prevent the water leaking into the magneto space).

Remove the **L. H. cover** when it is necessary to dismantle the clutch to replace the clutch plates) or the primary chain. Proceed as follows : 1. drain the oil, 2. slacken the 5 securing screws, 3. remove the cover along with the gear lever and shaft by carefully levering with two screwdrivers placed in the openings in the front and rear part of the cover.

When refitting the L. H. side cover do not forget to insert a new paper gasket and to tighten properly the screws in order to prevent oil leaking around the cover and the crankcase seating faces.

Note :

The right is reserved to effect modifications caused by development in the illustrations or specifications in this Manual.

IV. DEFECTS, CAUSES AND REMEDIES

Trouble			Location	Remedy
Lumpy running	Engnie knocks		Engine overheated.	Wait until engine has cooled do not run at high revolutions.
			Plug points glow, faulty sparking plug.	Replace sparking plug.
			Cylinder head clogged with carbon.	Remove cylinder head and decarbonise.
			Over-advanced ignition.	Adjust correct gap and reset ignition timing.
			Exhaust silencer clogged.	Detach exhaust silencer and clean it.
	Engine misfires	Regular sparking	Water or oil in carburetter.	Clean the carburetter.
			Insufficient fuel supply.	Open reserve supply tap, pass fuel over, re-fuel, inspect inlet manifolds.
			Temporary short circuiting caused by faulty plug lead.	Tape crack in insulation or replace lead.
			Weak mixture.	Adjust carburetter.
			Improperly mixed petroil.	Stir mixture properly before re-fuelling.
		Irregular sparking	Unsuitable sparking plug.	Replace sparking plug.
			Oiled sparking plug.	Remove and clean sparking plug.
			Excessive spark gap.	Adjust correct spacing to 0.45 mm (0.018 in).
			Dirty breaker points.	Clean the points using a cloth soaked in petrol.
			Improperly adjusted breaker points.	Adjust to 0, 4 mm.
			Temporary short circuiting caused by faulty plug lead.	Tape crack in insulation or replace lead.

Trouble				Location	Remedy
Engine will not fire, or has stopped. Carburetter can be flooded	Compression regular	Sparking regular	Carburetter in order	Engine overheated.	Let the engine cool and keep it at low revolutions.
				Insufficient Lubrication.	Take care that petroil is mixed properly at ratio 20 to 1 (16:1 during running-in).
				Throttle cable broken.	Replace throttle cable.
				Air leak between carbutter and cylinder.	Replace gasket.
			Carburetter faulty	Jet chocked.	Remove and clean the jet.
				Leaking float.	Solder or replace the float.
				Float stuck.	Release the float.
				Float needle does not seat properly.	Repair or repalce the needle.
Lumpy running	Engine lacks power		Permanent	Carbon accumulation in cylinder barrel and head, exhaust passages and silencers.	Remove cylinder head and barrel, exhaust pipes and decarbonise.
				Insufficient fuel feed.	Dismantle and clean fuel pipe.
				Improperly set ignition.	Adjust breaker point gap and ignition advance.
				Improper carburetter setting (improper mixture).	Adjsut idling speed, needle position and clean air cleaner.
				Exhaust silencers clogged.	Dismantle and decarbonise
				Worn cylinder interior and piston.	Rebore cylinder, replace piston and rings, have gudgeon pin bearing checked (at an accredited workshop)
				Engine drags wrong air (crankcase halves or Carburetter stump are not tight).	Take both crankcase halves apart, clean joint faces, apply jointing compound and reassemble properly.
					Replace carburetter stump gasket.
			Temporary	Fuel pipe or cleaner partly clogged.	Clean fuel pipe or cleaner.
				Throttle contril cable sticks.	Lubricate or replace.
				Engine overheated.	Allow the engine to cool and keep it at low revolutions.
				Faulty sparking plug.	Replace sparking plug.

Trouble			Location	Remedy
Engine will not fire — Engine has stopped	Carburetter cannot be flooded		Empty fuel tank.	Transfer fuel reserve and re-fuel at the earliest convenience.
			Fuel tap off.	Turn fuel tap on.
			Fuel filter above the tap clogged.	Unscrew the fuel tap and clean the filter.
			Chocked fuel pipe or screen in carburetter.	Remove and blow the fuel pipe, remove and clean the carburetter.
			Clogged filler cap vent on the fuel tank.	Clean filler cap vent.
	Carburetter can be flooded	Irregular sparking	Oiled sparking plug.	Remove and clean sparking plug.
			Damaged plug insulation.	Replace plug.
			Short circuiting between sparking plug points.	Clean sparking plug.
			Plug points gap too wide.	Adjust sparking plug gap to 0.45 mm. (0.018 in.)
		No spark at lead end	Ignition key not inserted.	Insert the key.
			Dirty breaker points.	Clean the point using a cloth soaked in petrol.
			Faulty breaker points.	Have point replaced.
			H. T. lead broken or loosed.	Tape insulation crack, replace lead at the earliest convenience.
			Burnt lead insulation	Tape lead and replace at the earliest convenience.
			Faulty condenser.	Replace condenser.
			Damaged stator winding insulation.	Refer to a specialist workshop.
			Water in contact breaker.	Blow out water, wipe off carefully, allow to dry.
		Regular sparking compression Poor	Broken piston ring.	Replace ring.
			Jammed piston ring.	Remove, clean and replace ring.
			Sparking plug washer leaks.	Replace washer.

TWO-STROKE ENGINE OPERATION

The two-stroke petrol engine is particularly suitable for motorcycles. Having few moving parts it is subjected to less wear and consequently is more reliable in operation. Its working action is accomplished in a single crankshaft revolution (i.e. two piston strokes).

1. PISTON MOVES UPWARDS :

The piston closes first the transfer ports, then the exhaust port and causes compression of the mixture in the compression space of the cylinder head. A few moments before the piston reaches its T.D.C. position the compressed mixture will be ignited by the electric spark from the sparking plug.

In the meantime a vacuum (underpressure) is created underneath the piston, causing induction of fresh mixture from the carburetter to in the interior of the crankcase.

2. PISTON MOVES DOWNWARDS :

After ignition of the mixture the actual **working stroke** of the piston begins (transmitting the power of the expanding gases by means of the crankshaft mechanism and transmission to the motorcycle rear wheel). The top edge of the piston opens first the exhaust port and the exhaust of the burnt gases takes place. The top edge of the piston then opens the two transfer ports. Under the piston and in the interior of the crankcase is fresh mixture, compressed by the piston during its downward stroke. Through open transfer ports this fresh mixture will now flow into the **cylinder directed by the shape of the ports :** the two streams meet, reach the opposite cylinder wall, proceed towards the cylinder head which directs them to the exhaust ports side. The fresh mixture fills the cylinder, pressing at the same time the remaining burnt mixture out (scavenging).

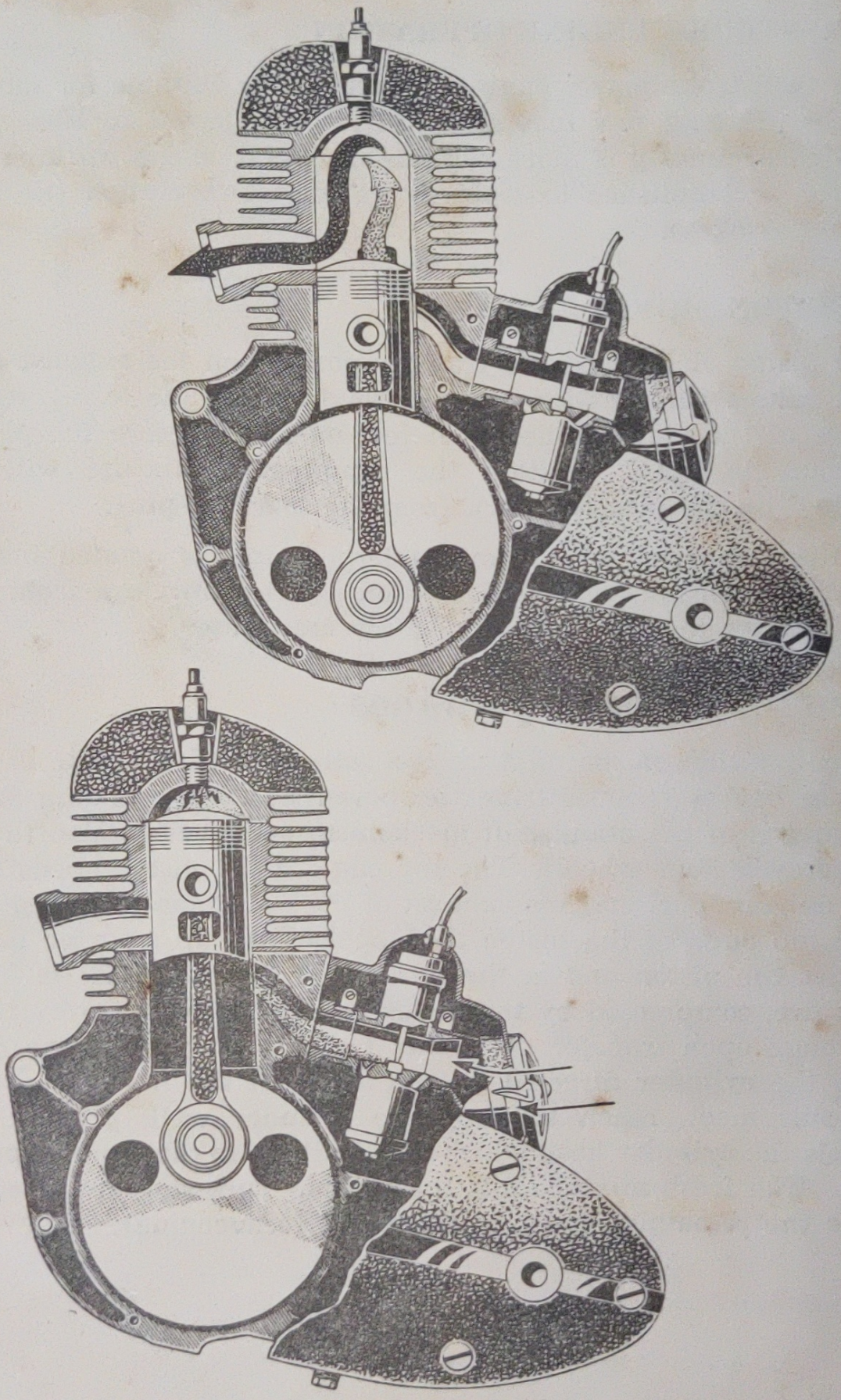


Fig. 42 Two-stroke engine operation diagram

MYR 3763 Made in 1967

JAWA

Engine No. 353-374544

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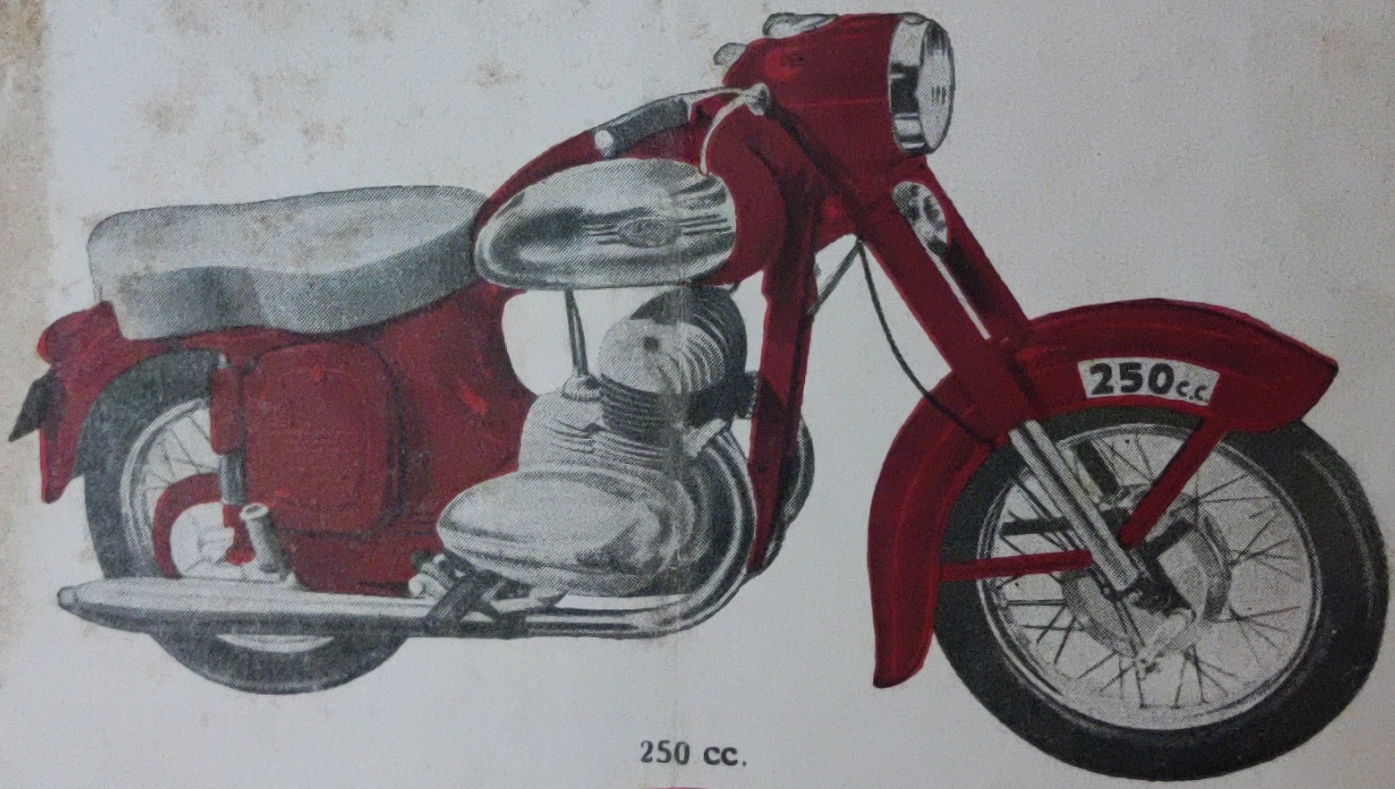

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omy of operation, riding comfort, easy handling, speed and stamina—these are the features ng the way to every part of the world for the IDEAL JAWA motor cycles. The IDEAL JAWA r cycles are endowed with the most up-to-date technical improvements, well tested and ed in numerous victorious trials and races.

UTOMATIC CLUTCH RELEASE when shifting gears —The clutch control lever serves for releasing the clutch on get-aways only. When shifting gears while in motion, the clutch is thrown off automatically.

SINGLE LEVER SERVES BOTH FOR GEAR SHIFTING AND FOR STARTING the engine. After the engine has been started the lever automatically resumes its shifting position—another feature facilitating the handling.

6" WHEELS—reduce the unsprung weight to the minimum, thus ensuring better riding comfort and more pleasure.

HE COWLINGS OF THE REAR PART AND DEEPLY VALANCED MUDGUARDS—ensure perfect protection of the rider from dirt from the road surface or from the engine and facilitates cleaning of the machine.

VIDER MOUNTING OF THE REAR PIVOTED FORK—increases riding safety.

FFICIENT INTAKE AND EXHAUST SILENCERS—reduce the noise below the specified limit.

TECHNICAL DATA

ne—Two stroke, single cylinder, bore 65 mm., stroke 75 mm., cylinder capacity 248,5cc., 12 I. P. at 4750 r.p.m. compression ratio 6.6 to 1.

ne lubrication—With petrol mixture at the rate of 25 to 1 (after running-in).

ch—Five plate with cork lining, running in oil bath, automatically controlled when changing s, or by means of hand lever on L. H. side of handlebars when starting from standstill.

buretter—JIKOV with wet air cleaner and strangler with effective air-intake.

rbox—Four speed, unit construction with engine, positive foot control on L. H. side and omatic clutch.

trical equipment—AC/DC-MAGNETO.

l tank—Capacity 2.9 gallons (13 litres) with two position fuel tap fitted with filter. Emergency l reserve for 20 miles (30 km).

nsmission—By means of totally enclosed primary chain 3/8×3/8 in., running in oil bath and by ans of fully enclosed secondary chain 1/2×5/16 in. in chaincase.

me—Closed, of best quality square section welded tubes with pivoted rear fork.

pension—Front-by means of telescopic fork with hydraulic dampers maximum stroke 5-1/8 in. 0 mm.). Rear-by means of pivoted rear fork with hydraulic dampers-maximum stroke 3-15/16 in. 0 mm.).

ndlebars—One piece, adjustable, width 26-3/8 in. (670 mm.). Bowdens can be adjusted on the ndlebars.

heels—Wire type, tyre size 3.25×16 in., easily detachable.

al seat—With foam rubber, easily detachable, theft proof.

otrests—Sports type, adjustable.

eight	293 lbs. (133 kg.)		Overall length	..	77.95 in. (1980 mm.)
rrying capacity ..	353 lbs. (160 kg.)		width	..	26.38 in. (670 mm.)
ximum climbing ability (fully loaded) ..	40%		height	..	40.35 in. (1025 mm.)

Modification of design and equipment may be effected without notice.

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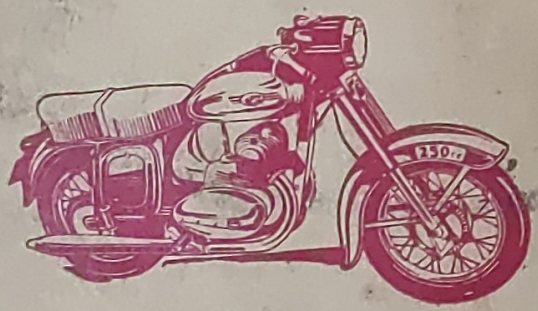
)EAL JAWA (INDIA) PRIVATE LTD., MYSORE



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